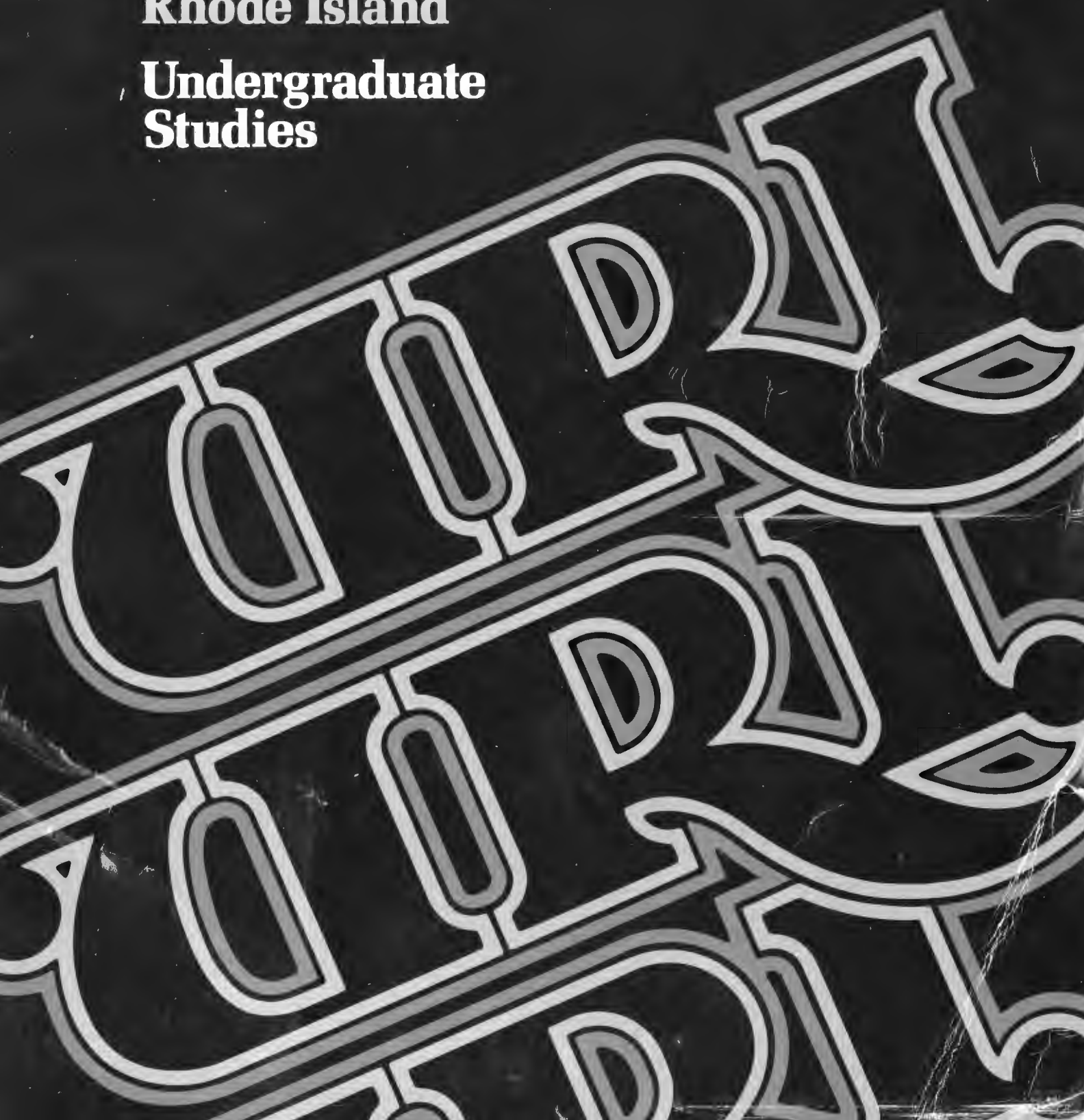


**1984-85 Bulletin of  
The University of  
Rhode Island**

**Undergraduate  
Studies**



# **The University of Rhode Island**

## **Undergraduate Studies 1984-85**



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# 1984-85 Calendar

## First Semester

### August 27–September 7

Registration period, College of Continuing Education (CCE)

### September 3, Monday

Holiday, Labor Day

### September 4, Tuesday

Kingston campus registration, 8 am–5 pm

### September 5, Wednesday

Classes begin, Kingston campus — 8 am;  
CCE — 9 am

University Faculty Meeting, 3:30 pm

### September 14, Friday

Final day for students to drop "Early Drop" courses

### September 18, Tuesday

Final day for students to add courses and to add P/F grading option

### October 8, Monday

Holiday, Columbus Day

### October 10, Wednesday

Monday classes meet  
Final day for students to drop courses

### October 22–26

Preregistration for spring semester,  
Kingston campus only

### October 22, Monday

Mid-semester. Final day for students to change from P/F option to grade

### November 6, Tuesday

Holiday, Election Day

### November 12, Monday

Holiday, Veterans' Day

### November 15, Thursday

University Faculty Meeting, 3:30 pm

### November 22, Thursday

Thanksgiving recess begins, 8 am

### November 26, Monday

Classes resume, 8 am

### December 11, Tuesday

Classes end, Kingston campus

### December 12, 13, 15, 16

Reading days, Kingston campus

### December 14, 17–21

Final examinations, Kingston campus

### December 22, Saturday

CCE classes end, examinations end

### December 24, Monday

Final grades due in Registrar's Office, 4 pm

## Second Semester

### January 7–18

Registration period, College of Continuing Education (CCE)

### January 15, Tuesday

Kingston campus registration, 8 am–5 pm

### January 16, Wednesday

Classes begin, Kingston campus — 8 am;  
CCE — 9 am

University Faculty Meeting, 3:30 pm

### January 25, Friday

Final day for students to drop "Early Drop" courses

### January 29, Tuesday

Final day for students to add courses and to add P/F grading option

### February 18, Monday

Holiday, Washington's Birthday

### February 20, Wednesday

Monday classes meet  
Final day for students to drop courses

### March 6, Wednesday

Mid-semester. Final day for students to change from P/F option to grade

### March 11, Monday

Spring recess begins, 8 am

### March 18, Monday

Classes resume, 8 am

### March 25–29

Preregistration for fall semester, Kingston campus only

### April 30, Tuesday

University Faculty Meeting, 3:30 pm

### May 1, Wednesday

Classes end, Kingston campus

### May 2, 4, 5

Reading days, Kingston campus

### May 3, 6–10

Final examinations, Kingston campus

### May 10, Friday

CCE classes end, examinations end

### May 13, Monday

Final grades due in Registrar's Office, 4 pm

### May 26, Sunday

Commencement

## Summer Session 1985

### June 10–July 11

First five-week session

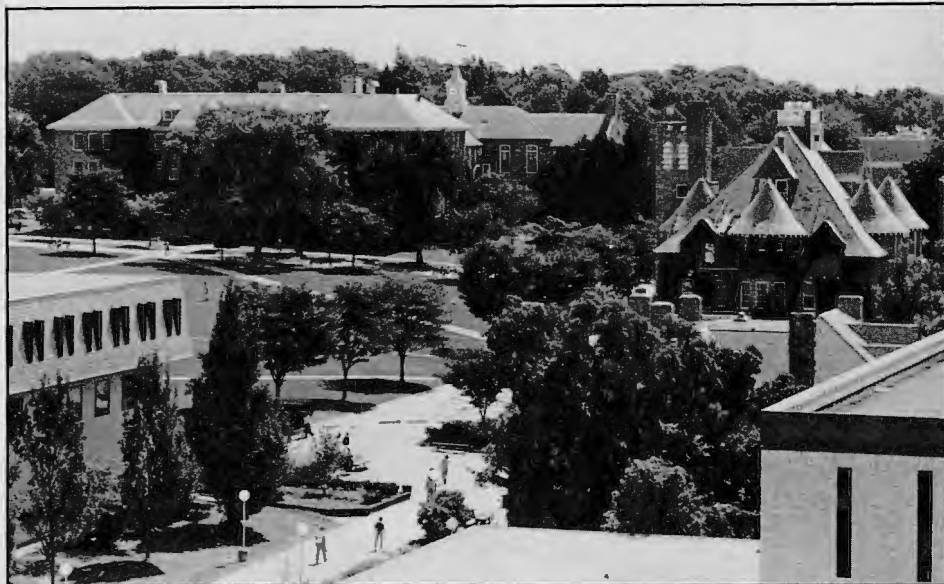
### July 15–August 15

Second five-week session

Changes in the academic calendar due to major storms, labor unrest, or other circumstances, may be made when it is in the best interest of the institution, and without prior notice to the students.



# The University



The University of Rhode Island is a medium-sized state university in the southern part of Rhode Island in the village of Kingston. In part because of its unique location near the ocean and six miles from Narragansett Bay, the University has developed strong marine programs and has been designated one of the national Sea Grant colleges. As a land-grant college since its founding in 1892, it emphasizes preparation for earning a living and for responsible citizenship, carries on research, and takes its expertise to the community in extension programs.

The University enrolls about 11,000 students on its Kingston campus and another 3,000 in credit courses throughout the state. About half of the 11,000 undergraduates are resident students; there are about 2,500 graduate students, and a full-time teaching faculty of about 730.

**The Campus.** The University has a spacious country campus 30 miles south of Providence in the northeastern metropolitan corridor between New York and Boston. The center of campus is a quadrangle of handsome old granite buildings surrounded by other newer academic buildings, student residence halls, and fraternity and sorority houses. On the plain below Kingston Hill are gymnasiums, athletic fields, tennis courts, a freshwater pond, agricultural fields, and greenhouses.

In addition to the Kingston campus, the University has three other campuses. The 165-acre Narragansett

Bay Campus, six miles to the east overlooking the west passage of the Narragansett Bay, is the site of the Graduate School of Oceanography. The Rhode Island Atomic Reactor and several federal laboratories devoted to marine sciences are also located there. The College of Continuing Education has a building in downtown Providence. In the western section of the state, 20 miles from Kingston, is the W. Alton Jones Campus. Its 2,300 acres of woods, fields, streams, and ponds is the site of environmental education, research, and conference facilities.

**History.** The University had its beginning in the state agricultural school chartered in 1888. The Oliver Watson farm was purchased as a site for the school, and the old farmhouse, now restored, still stands on the campus. The school became the Rhode Island College of Agriculture and Mechanic Arts in 1892, and the first class of 17 members was graduated two years later.

The Morrill Act of 1862 provided for the sale of public lands, the income from which was to be used to create at least one college in each state with the principal purpose of teaching agriculture and mechanic arts. From this grant of land comes the name land-grant applied to the national system of state colleges and, in a later adaptation of the concept, federal funds given to colleges for marine research and extension are called sea grants.

In 1909 the name of the college was

changed to Rhode Island State College, and the program of study was revised and expanded. In 1951 the college became the University of Rhode Island by act of the General Assembly. The Board of Governors for Higher Education appointed by the governor became the governing body for the University in 1981. A historical outline may be found in the appendix.

## Programs of Study

**Undergraduate Study.** All programs aim at a balance of studies of the natural and social sciences, the humanities, and professional subjects. The courses and programs of study have been approved by national accrediting agencies and are accepted for credit by other approved institutions of higher education (see Programs and Requirements).

Undergraduate students may earn the following degrees:

- Bachelor of Arts
- Bachelor of Science
- Bachelor of Fine Arts
- Bachelor of Music
- Associate in Science in dental hygiene or in fisheries and marine technology (two-year programs)
- Bachelor of General Studies (College of Continuing Education only)

All freshmen who enter the University to earn a bachelor's degree are first enrolled in University College

## Undergraduate Degrees

### College of Arts and Sciences

Anthropology: B.A.  
 Art: B.A., B.F.A.  
 Biology: B.A.  
 Botany: B.S.  
 Chemistry: B.A., B.S.  
 Classical Studies: B.A.  
 Comparative Literature Studies: B.A.  
 Computer Science: B.S.  
 Dental Hygiene: (four years) B.S.,  
 (two years) A.S.  
 Economics: B.A.  
 English: B.A.  
 French: B.A.  
 Geography and Marine Affairs: B.A.  
 Geology: B.A.  
 German: B.A.  
 History: B.A.  
 Italian: B.A.  
 Journalism: B.A.  
 Latin American Studies: B.A.  
 Linguistics: B.A.  
 Mathematics: B.A., B.S.  
 Medical Technology: B.S.  
 Microbiology: B.S.  
 Music: B.A., B. Mus.  
 Philosophy: B.A.  
 Physics: B.A., B.S.  
 Political Science: B.A.  
 Psychology: B.A.  
 Russian: B.A.  
 Sociology: B.A.  
 Spanish: B.A.  
 Speech Communication: B.A.  
 Theatre: B.A., B.F.A.  
 Urban Affairs: B.A.  
 Women's Studies: B.A.  
 Zoology: B.S.

### College of Business Administration

Accounting: B.S.  
 Finance: B.S.  
 General Business Administration: B.S.  
 Insurance: B.S.  
 Management: B.S.  
 Management Information Systems: B.S.  
 Management Science: B.S.  
 Marketing: B.S.  
 Personnel Management, B.S.  
 Production and Operations Management:  
 B.S.

### College of Engineering

Biomedical Electronics Engineering: B.S.  
 Chemical Engineering: B.S.  
 Chemical and Ocean Engineering: B.S.  
 Civil Engineering: B.S.  
 Computer Electronics Engineering: B.S.  
 Electrical Engineering: B.S.  
 Industrial Engineering: B.S.  
 Mechanical Engineering: B.S.

### College of Continuing Education

Bachelor of General Studies: B.G.S.

### College of Human Science and Services

Consumer Affairs: B.S.  
 Education: (elementary and secondary) B.S.  
 General Home Economics: B.S.  
 Home Economics Education: B.S.  
 Human Development and Family Studies: B.S.  
 Human Science and Services: B.S.  
 Physical Education, Health, and  
 Recreation: B.S.  
 Textiles, Fashion Merchandising and  
 Design: B.S.  
 Textile Marketing: B.S.  
 Urban Affairs: B.S.

### College of Nursing

Nursing: B.S.

### College of Pharmacy

Pharmacy: (five years) B.S.  
 Respiratory Therapy: B.S.

### College of Resource Development

Animal Science and Technology: B.S.  
 Aquaculture and Fishery Technology: B.S.  
 Fisheries and Marine Technology:  
 (two years) A.S.  
 Food Science and Nutrition: B.S.  
 Natural Resources: B.S.  
 Plant Science and Technology: B.S.  
 Urban Affairs: B.S.

## Graduate Degrees

Accounting, M.S.  
 Animal Pathology, M.S.  
 Animal Science, M.S.  
 Applied Mathematical Sciences, Ph.D.

- Applied Mathematics
- Computer Science
- Operations Research
- Statistics
- Applied Probability
- Biochemistry-Biophysics, M.S.
- Biological Sciences, M.S., Ph.D.
  - Animal Pathology
  - Biochemistry-Biophysics
  - Botany
  - Food Science and Nutrition
  - Microbiology
  - Plant Pathology
  - Resource Chemistry
  - Zoology

Botany, M.S.  
 Business Administration, M.B.A.  
 Chemical Engineering, M.S., Ph.D.  
 Chemistry, M.S., Ph.D.  
 Child Development and Family Relations,  
 M.S.  
 • Marriage and Family Counseling  
 Civil and Environmental Engineering,  
 M.S., Ph.D.

Community Planning, M.C.P.  
 Comparative Literature, M.A.  
 Computer Science, M.S.  
 Doctor of Pharmacy, Pharm.D.  
 Economics, M.A.  
 Economics-Marine Resources, Ph.D.  
 Education, M.A.

- Education Research
- Elementary Education
- Guidance and Counseling
- Reading Education
- Science Education
- Secondary Education
- Youth and Adult Education
- Electrical Engineering, M.S., Ph.D.
  - Biomedical Engineering
- English, M.A., Ph.D.
- Environmental Health Science, M.S.
- Food Science and Nutrition, M.S.
- French, M.A.
- Geography, M.A.
- Geology, M.S.
- History, M.A.
- Home Economics Education, M.S.
- Industrial Engineering, M.S.
- Labor Studies and Labor Relations, M.S.
- Library Science, M.L.S.
- Marine Affairs, M.A., M.M.A.
- Mathematics, M.S., Ph.D.
- Mechanical Engineering and Applied  
 Mechanics, M.S., Ph.D.
- Medicinal Chemistry, M.S.
- Microbiology, M.S.
- Music, M.M.
- Nursing, M.S.
- Ocean Engineering, M.S., Ph.D.
- Oceanography, M.S., Ph.D.
- Pharmaceutical Sciences, Ph.D.
  - Medicinal Chemistry
  - Pharmacognosy
  - Pharmacology and Toxicology
  - Pharmaceuticals
- Pharmacognosy, M.S.
- Pharmacology and Toxicology, M.S.
- Pharmaceutics, M.S.
- Pharmacy Administration, M.S.
- Philosophy, M.A.
- Physical Education, M.S.
- Physics, M.S., Ph.D.
- Plant and Soil Science, M.S.
- Plant Pathology-Entomology, M.S.
- Political Science, M.A.
  - International Relations
- Psychology (School), M.S., Ph.D.
- Psychology, Ph.D.
  - Clinical
  - General Experimental
- Public Administration, M.P.A.
- Resource Chemistry, M.S.
- Resource Economics, M.S.
- Sociology, M.A.
- Spanish, M.A.
- Speech Pathology and Audiology, M.A.,  
 M.S.
- Statistics, M.S.
- Textiles, Clothing and Related Art, M.S.
- Zoology, M.S.



(see page 28). Undergraduates have a wide choice of programs from which to choose a concentration, and the advising program in University College provides help in making this decision and in choosing appropriate courses.

The programs listed on the previous page are presented in detail in chapters describing the individual colleges. Interdepartmental curriculums and areas of interest are detailed in the chapter on University Programs and Requirements.

**Graduate Study.** Study at the graduate level leads to the master's degree in over 60 areas of study and the degree of Doctor of Philosophy in 24. Students may earn the following degrees:

- Master of Arts
- Master of Science
- Master of Business Administration
- Master of Community Planning
- Master of Library Science
- Master of Marine Affairs
- Master of Music
- Master of Public Administration
- Doctor of Pharmacy
- Doctor of Philosophy

**Graduate School.** Students holding the baccalaureate degree from this University or from another having equivalent requirements may be admitted for graduate study, providing that their credentials meet the standards set by the Graduate School and by the department in which they wish to study, and that facilities for study are available in their field of interest. Among the standards required for full status admission are an undergraduate average approximating B or better and satisfactory scores on a nationally administered examination. Applicants with somewhat lower undergraduate averages but high examination scores may also be admitted in individual cases.

Within each college's chapter in this bulletin, the related graduate degrees are listed. A *Graduate Bulletin*, containing complete information on graduate study and application forms, is available from the Dean of the Graduate School, The University of Rhode Island, Kingston, RI 02881. Further information may be requested from the chairperson of the appropriate department. Applications are returned to the Dean of the Graduate School.

Each applicant must submit (1) completed application forms in duplicate

with a \$15 nonrefundable application fee (check or money order payable to the University of Rhode Island); (2) three letters of recommendation from individuals familiar with the applicant's work, preferably in the field for which he or she is applying; (3) two copies of an official transcript sent directly from each college or university attended; and (4) scores from the Graduate Record Examination aptitude tests. See the *Graduate School Bulletin* for those programs which require the GRE advanced tests or which require a different national test.

Applicants from foreign countries must complete the Test of English as a Foreign Language (TOEFL) with minimum scores of 500 for science students and 550 for non-science students. All inquiries from international students concerning applications, fees, housing, etc., should be directed to the Office of International Student Affairs.

The usual deadlines for receipt of applications are April 15 for September and Summer Session admission, and November 15 for February admission. See the *Graduate School Bulletin* for those programs which have earlier application deadlines.

The *Graduate Library School* on the main campus offers study leading to the Master of Library Science degree. Students in undergraduate and other graduate programs may, with the approval of their adviser, enroll in library science courses that relate to their studies.

The *Graduate School of Oceanography* on the Narragansett Bay Campus, six miles from Kingston, offers study leading to the Master of Science and Doctor of Philosophy degrees in the areas of biological, chemical, geological, and physical oceanography. Instruction is limited to graduate study with the exception of a survey course in general oceanography and two programs designed to provide undergraduates with work experience in marine research. These offerings are at the 400 level.

The 165-acre Narragansett Bay Campus borders the shore and includes a basin and dock within easy reach of both the Bay and the open ocean. The University operates several vessels, the largest of which is a 177-foot ocean-going research ship, *Endeavor*.

A number of buildings make up the

Bay campus and include a quadrangle of laboratories, offices, and the Pell Marine Science Laboratory; a 12,000-square-foot research aquarium; a towing test tank; and a specially designed facility which permits moderate-scale controlled ecosystems experiments.

## Academic Services

**The University Libraries.** The University's library collection of 750,000 bound volumes and 800,000 volume-equivalent microforms is housed in the University Library in Kingston, at the College of Continuing Education in Providence, and in the Claiborne Pell Marine Science Library on the Narragansett Bay Campus. The latter was designated the National Sea Grant Depository in 1971.

The University Library, which holds the bulk of the collection, has open stacks which provide direct access to books, periodicals, documents, maps, microforms, and audiovisual materials. The Special Collections Department collects and maintains rare books, manuscripts, the University archives, and a variety of special interest materials. Service hours at the other libraries vary, but the University Library provides full reference, bibliographic, and circulation services during most of the 90 hours a week it is open. Terminals linked to the Academic Computer Center are available in the Library during the hours both facilities are open.

**The Academic Computer Center.** The Academic Computer Center has a National Advanced System (NAS) 7000N mainframe computer and two PRIME 850 minicomputers. Over 300 terminals may be attached simultaneously to these systems. Access to specific applications including remote independent computers is provided by a MICOM port selector. The mainframe uses modern IBM operating systems for both batch processing as well as full-function timesharing. The minicomputers are used for interactive research and instructional computing. Both systems have a full complement of programming languages and packages. The center has a CalComp 1051/906 plotter with extensive display and preview facilities for hardcopy graphics output. Graphics software packages

include SYMAP, SYMVU, CALFORM, ASPEX, and FORTRAN callable sub-routines. Interactive graphic facilities using Tektronix terminals are provided. Various types of typewriter and display terminals for interactive use or remote job entry are located on the campus in most of the science and engineering departments as well as the College of Business Administration, the College of Continuing Education, the College of Pharmacy, the Memorial Union, the University Library, and the Graduate School of Oceanography. A microcomputer laboratory is also maintained in the College of Business Administration.

The staff develops and maintains programming systems and application programs, conducts short courses and workshops, and provides consultation on the facilities and their use. They also provide assistance in the purchase, rental, maintenance, and installation of small computers and telecommunications equipment.

## Research and Extension

Within the state system of higher education, the University has the major responsibility for graduate education which is interdependent with a strong program of research. There are active research programs in almost all departments of the University, and in 1982-83 funds for research totalled \$25,000,000. Support comes from foundations, commercial firms, federal and state governments, and the University. Applications for research grants are signed by the University's Coordinator of Research who is the liaison officer for the president, the business manager, the academic deans, the Research Committee and the faculty in matters pertaining to general research policy.

In addition to research conducted in the various departments, the University has established a number of research and extension programs in specially defined areas; these are described in detail in the Appendix.

The University distributes the results of its research in publications available to the public. These include a series of marine bulletins, technical reports, and Cooperative Extension and Agricultural Experiment Station bulletins.

The University also publishes through the University Press of New England, of

which it is a member. Manuscripts originating on the seven member campuses and elsewhere are published as determined by the director and the editorial board on which the University is represented.

## The University Community

In addition to the student body, the University community is made up of faculty, administration, staff, and alumni. The *Faculty Senate* represents the faculty and was authorized in 1960 by the general faculty to conduct the business assigned to the faculty by law or by the Board of Governors for Higher Education. The *Graduate Council* is the representative body for the graduate faculty and determines the academic policies for graduate study. The office of *University Ombudsman* investigates complaints from students, faculty, and administrative personnel that they have been unfairly dealt with in the normal channels of administrative process. The ombudsman is a tenured member of the faculty, elected by the general faculty, and is assisted by a student nominated by the Student Senate and appointed by the president.

The *Instructional Development Program* exists to assist the faculty in its teaching responsibilities. Workshops, colloquiums, and seminars, as well as personal consultations, assist faculty interested in increasing their teaching effectiveness.

The voice of the alumni is heard through the *Alumni Association* which includes all those who have attended the University for two semesters or more and whose class has graduated. The organization, with about 49,000 members, promotes the interests of the University and maintains the ties of alumni with their alma mater through programs, services, and the publication of a bulletin. An annual fund drive provides scholarship and other University aid.

The University receives less than half of its support from the state. The balance comes from student fees and tuition, federal grants, and auxiliary enterprises and other miscellaneous sources. The *University of Rhode Island Foundation* encourages and administers gifts from private sources to build a substantial endowment for continuing

support of the University. It is concerned with the support of University activities for which adequate provision is not ordinarily made by appropriations from public funds.

## Affirmative Action and Non-

**Discrimination.** The University of Rhode Island prohibits discrimination on the basis of race, sex, religion, age, color, creed, national origin, or handicap and discrimination against disabled and Vietnam era veterans in the recruitment, admission, or treatment of students, the recruitment, hiring or treatment of faculty and staff, and the operation of its activities and programs. This is in compliance with state and federal laws, including Titles VI and VII of the Civil Rights Act of 1964 as amended, Title IX of the 1972 Education Amendments to the Higher Education Act, Executive Order 11246, as amended, Sections 503/504 of the Rehabilitation Act of 1973, and Section 402 of the Vietnam Era Readjustment Assistance Act of 1974.

Most buildings on campus are architecturally available to the handicapped (see map on page 196) and provision is made to insure that no student is prevented from pursuing a course of study because of restricted access to buildings.

Inquiries concerning compliance with antidiscrimination laws should be addressed to the Affirmative Action Officer, the University of Rhode Island. Questions regarding provisions for the handicapped should be directed to the Coordinator of Handicapped Services in the Office of Student Life.



## Programs and Requirements



Consistent with its policy of allowing the greatest latitude possible in course selection, the University offers a wide choice to fill its general education requirements and encourages students to select free electives that cross departmental and college lines. This section deals with academic requirements, regulations, and opportunities that are University-wide rather than college-related.

The University attempts to provide the successful student with a range of knowledge and skills which can, with appropriate motivation and initiative, be used in a variety of ways after graduation. Study options vary from the traditional liberal education to programs which are heavily vocationally oriented. Successful completion of any course of study at the University, however, does not guarantee that the student will find either a specific kind or level of employment.

Students interested in the career opportunities related to particular programs of study are encouraged to consult University College advisers, the appropriate department chairperson, and/or the staff of the Office of Career Services. For students who are uncertain about their career choices, the Counseling Center offers help.

The University administration may alter, abridge or eliminate courses and programs of study. While every effort is made to keep this catalog current, not all courses and programs of study listed may be available at the time of student's matriculation. Similarly, course and program requirements may be changed

from time to time. In all cases every effort will be made to accommodate individual students whose exceptional circumstances may make it difficult or impossible to meet the changed requirements. Changes in the academic calendar may also be made when deemed to be in the best interest of the institution.

**Accreditation.** The courses and programs of study offered by the University of Rhode Island have been approved by national accrediting agencies and are accepted for credit toward college degrees by other approved institutions of higher learning. The national accrediting agencies which have approved the quality of the course offerings of the University of Rhode Island include the American Association of Universities, the American Assembly of Collegiate Schools of Business, the American Chemical Society, the American Council on Pharmaceutical Education, the American Dental Association (Council on Dental Education), the American Library Association, the American Psychological Association, the American Society of Journalism School Administrators, the Accreditation Board for Engineering and Technology, the National Association of Schools of Music, the National League for Nursing, the New England Association of Colleges and Secondary Schools, and the State University of New York.

The University is also an approved member institution of the American Association of University Women, the Council

of Graduate Schools in the United States, the North American Association of Summer Sessions, and the National University Extension Association.

### General Education Requirements

**These requirements apply to freshmen entering after the fall of 1981 and transfer students who entered in the fall of 1981 with fewer than 16 transferable credits. Students who entered prior to fall 1981 must follow the General Education requirements outlined in the Undergraduate Bulletin for 1980-81 or the year in which they matriculated at the University.**

The University of Rhode Island believes that all undergraduate students, regardless of their degree program, need experience in the study of fundamentals which builds upon the student's previous education and continues to be advanced through the undergraduate years and beyond. Thus, all bachelor's degree students follow the same University-wide General Education requirements.

General Education is that part of the undergraduate curriculum in which students explore a broad spectrum of intellectual subjects, approaches, and perspectives. The General Education component of the curriculum aims to help accomplish these three goals: (1) develop further the essential English communication abilities upon which advanced studies depend; (2) offer

experience in five broad subject areas: fine arts and literature, letters, mathematics, natural sciences, and social sciences; and (3) expose the student to a foreign language or culture.

The General Education program is divided into the following components which correspond to these goals:

**English Communication.** 6 credits in English communication, at least 3 of which must be in a course designed specifically to improve written communication skills;

**Fine Arts and Literature.** 6 credits in courses related to historical and critical study of the arts and literature as well as creative activity;

**Foreign Language or Culture.** 6 credits or the equivalent in a foreign language or foreign culture;

**Letters.** 6 credits in courses which address fundamental questions about the human condition, human values, and ways of communicating these values;

**Mathematics.** 3 credits in a course specifically designed to provide training in college-level quantitative skills and their application;

**Natural Sciences.** 6 credits in courses in physical, chemical or biological sciences;

**Social Sciences.** 6 credits in courses related to the study of the individual (development and behavior) and society.

Specific courses which may be used to meet these requirements are listed in the following groups:

**English Communication: Writing (Cw)** —BGS 100; CMS 101; ENG 103; MGT 227; WRT 101, 102, 103, 112, 122, 123, 300, and 333. **General (C)**—CMS 101; PHL 101; SPE 101 and 103.

**Fine Arts and Literature (A):** ART 101, 103, 120, 203, 207, 215, 231, 233, 251, 252, 263, 265, 280, 284, 285, 359, 374; CLA 394, 395, 396; CLS 160, 250; ENG 160, 241, 242, 243, 245, 246, 251, 252, 263, 264, 265, 280; FRN 327, 328, 391, 392, 393; GER 325, 326, 391, 392; HPR 101; ITL 325, 326, 391, 392, 395; MUS 101, 106, 111; PLS 233; RUS 325, 326, 391, 392; SPA 303, 306, 391, 392; SPE 231; THE 100, 181, 381, 382, 383.

**Foreign Language or Culture (F):** This requirement shall be fulfilled in one of the following ways: (1) a two-course sequence in a language previously studied for two or more years in high school through at least the 103 level in a living language or 301 in a classical language appropriate to a student's level of competence (e.g., 102 and 103, 102 and 301; 131 and 103; 103 and 104; 301 and 302); (2) demonstration of competence through the intermediate level by examination<sup>1</sup> or by successfully completing 104 in a living language or 302 in a classical language; (3) coursework in a language not previously studied (or studied for less than two years in high school) through the beginning level; (4) study abroad in an approved academic program for one semester; (5) majoring in a foreign language; (6) coursework selected from one foreign culture cluster taken, if possible, in the same or successive semesters from the following list: *Africa*, AAF 250, APG 250, 313, HIS 388, PSC 408; *American Indian*, APG 303, 311, HIS 344; *Ancient Greece and Rome*, ART 354, CLA 394, 396, ENG 366, GRK 109, 110, HIS 111, PHL 321; *East Asia*, HIS 171, 374, 375, PHL 131, 331; *France*, ART 265, FRN 392, 393, HIS 330; *Germany*, GER 391, 392, 393, HIS 125, 326, 327; *Ireland*, APG 325, IRE 391, 392; *Islamic Civilization*, HIS 174, 175; *Israel*, HIS 378, PSC 321; *Latin America*, APG 315, HIS 180, 381, 382, 383, 384; *Medieval Europe*, ART 356, HIS 112, 304, ITL 395, PHL 322; *Modern British Civilization*, ART 264, ENG 252, HIS 123; *Modern Europe (Early)*, ART 359, HIS 113, 306, 307, 314, PHL 323; *Modern Europe*, ART 363, HIS 114, 310, 311, 315, PSC 401; *Renaissance in Europe*, ART 365, HIS 305, ITL 391, SPA 391; *Russia and the Soviet Union*, HIS 132, 332, 333, RUS 391, 392, PSC 407; *URI in England*, ENG 397, HIS 397. Formally registered international students and students with a recognized immigrant status shall be exempt from the foreign language or foreign culture requirement.

**Letters (L):** BGS 392; HIS 103, 105, 111, 112, 113, 114, 115, 116, 118, 122, 125, 132, 141, 142, 143, 145, 150, 171, 180, 304, 305, 306, 307, 309, 310, 311, 315, 321, 322, 323, 324, 325, 327, 332, 333, 340, 341, 342, 346, 353, 354, 381, 382, 383, 384; HPR 104; NUR 360; PHL 103, 104, 111, 117, 125, 126, 131, 227, 312, 314, 318, 319, 321, 322, 323, 324, 325, 328, 331, 346; PSC 341, 342; SPE 200, 205, 210.

**Mathematics (M):** CSC 201; EST 220; MGS 101, 102; MTH 107, 108, 109, 111, 141, 142.

**Natural Sciences (N):** APG 201; AST 108; AVS 101; BGS 391; BIO 101, 102A; BOT 111; CHM 101, 102, 103, 105, 107, 112, 114, 124, 191, 192; FSN 207; GEL 100, 103, 104, 105, 106; HPR 103; NRS 212; OCG 401; PHY 111, 112, 120, 130, 140, 185, 186, 213, 214, 285, 286; ZOO 111, 286.

**Social Sciences (S):** AAF 101, 102; APG 200, 202, 203, 319; BGS 390; CNS 220; CSC 220; ECN 125, 126, 300, 361; EDC 102, 312; ENG 232, 330; FSN 150; GMA 100, 102, 131; HCF 220; HLT 123; HPR 102; HSS 350; MGT 110; NRS 100; NUR 150; PSC 113, 116, 201, 221, 288; PSY 103, 113, 232, 235, 254; REN 105; SOC 100, 102, 204, 206, 210, 212, 214, 216, 224, 238, 240, 241, 242, 316, 330, 336; SPE 220; TMD 224; WMS 200.

Honors students may receive General Education credit for honors sections of courses which have been approved for General Education credit.

Transfer students may receive General Education credit for courses taken at other institutions as long as such credits are in courses equivalent to courses given General Education credit at the University of Rhode Island.

In the Colleges of Arts and Sciences and Human Science and Services and for the Bachelor of General Studies, credits within a student's own field of concentration may not be counted towards General Education requirements in Fine Arts and Literature, Letters, Natural Sciences or Social Sciences. In other colleges, credits within a student's professional college may not be counted towards any General Education requirements. However, courses which serve as prerequisites for a major may be used to fulfill the General Education requirement.

**Students must meet the curricular requirements of the colleges in which they plan to earn their degrees. Some colleges require that students select**

<sup>1</sup>Students who fulfill this requirement through an examination cannot earn course credit for graduation. Students who earn less than 6 credits in fulfilling the requirement should apply credits to the elective or major areas.

specific courses from the above lists. Therefore, students must refer to the requirements specified for their programs (pages 29-78).

## Other Academic Requirements

Certain basic courses are required in many curriculums for transfer from University College into the degree-granting colleges at the junior-year level. These are listed in the individual colleges' curriculums.

The responsibility for meeting all course and credit requirements for the degree must rest with each individual student.

Students who desire to accelerate their programs and receive credit for courses taken at other institutions or during Summer Session or in the College of Continuing Education must have prior approval from their academic deans.

## Interdepartmental Study

Students are encouraged to develop interests across departmental lines, and interdepartmental curriculums and areas of interest have been developed.

### African and Afro-American Studies.

Students who declare African and Afro-American Studies as a minor (see page 30) may use the following courses to fulfill the requirements. AAF 101, 102 (6 credits) are required. Elective courses (12 credits) may be selected from AAF 250, 390, 410; APG 313; ENG 345, 346, 444; HIS 150, 175, 345, 379, 384, 388, 580; PSC 495, 510; REN 595; SOC 240, 214. Permission may be obtained on an ad hoc basis to use other courses that have as their central focus one or another aspect of the black experience.

**Comparative Literature Studies.** This program is offered jointly by the Department of English and the Department of Languages represented by the following national literatures: French, German, Greek, Italian, Latin, Portuguese, Russian, and Spanish. One of the concentration options and some individual courses are interdisciplinary. For a description of the curriculum and a listing of the courses see pages 34 and 92.

**Consumer Affairs.** This interdisciplinary program is designed for students who

wish to develop effective strategies for dealing with complex social and economic systems relating to consumer concerns. Although affiliated with the Division of Interdisciplinary Studies in the College of Human Science and Services, coursework is drawn from a variety of colleges and departments to provide a broad perspective on issues relating to consumers. An internship or field experience is an integral part of the program. Interested students should consult with the program head or a member of the Consumer Affairs Coordinating Committee for program planning and course approval. (See page 64).

Students who declare a minor in consumer affairs are required to complete 18 credits in selected coursework. Suggested courses might include: CNS 220, 320, 350, 420, and 422, as well as courses in political science, marketing, and business law.

**Gerontology** (The Study of Human Aging). The Program in Gerontology is a University-wide program which promotes study, teaching, and research in aging throughout the University. It also maintains relationships with state and local agencies which serve the older population of Rhode Island. This affords opportunities for research, internships, and field experiences to students interested in the problems of aging.

The Adulthood and Aging option within the Bachelor of Science degree in Human Science and Services is limited to 15 students a year. There is also opportunity for students taking their major studies in a number of areas to do a less specialized study in aging by declaring a minor in gerontology. This must be done not later than the first semester of the senior year. It requires 18 or more credits in aging-related studies approved by the Program in Gerontology and the college in which the student is registered.

HCF 220 (Gerontology: Theory and Application) is required for either specialization. It also meets a social science requirement in General Education. Undergraduate gerontology courses include HCF 221, 420, 422, 431; CNS 342, DHY 462, FSN 307, RCR 416 and SOC 438. Also relevant are ZOO 242, HCF 380, 421, 450, and the University Year for Action.

It is important to take courses which fulfill degree requirements from the beginning. Students who wish to

specialize in aging are advised to contact the Program in Gerontology early in their university studies.

**Human Science and Services.** The Program in Human Science and Services is an interdisciplinary program designed for students who wish to work with people, enjoy the social sciences and want to be able to apply them in dealing with people, and want an academic program which will prepare them broadly in the field of human science and services. While the program is a part of the Division of Interdisciplinary Studies in the College of Human Science and Services, courses are drawn from departments across the University. In addition to General Education, the program requires the Human Science and Service core, two 18-credit option areas, professional electives, and a field experience. For a full description of the curriculum and required courses, see page 66.

**New England Studies.** Students who declare New England Studies as a minor must take either NES 200 or 300 and elect at least one course from each of the following four categories: (1) Cultural Patterns—PSC 221, APG 317, ENG 430; (2) Aesthetic Dimensions—ART 263, ENG 347, 440; (3) Historical Dimensions—HIS 335, 346, 362; (4) Physical Dimensions—BOT 323, 418, 424; FMT 118, FOR 301, 302, GEL 101, 455-57. Permission may be obtained from the Committee for New England Studies to use any rotating topics course, seminar, etc., whose focus is on some aspect of New England as a substitute for any of the above courses.

**Special Populations.** This interdepartmental minor provides students the opportunity to explore the theory and gain practical experience through working with people who have special needs. This includes people who are handicapped (physically, emotionally, mentally, or educationally) or are different (socioeconomically, behaviorally, culturally) and as a result have special needs.

A minimum of 18 credits may be earned by taking the required courses (NUR 101, HCF 200 or PSY 232, PSY 442), a minimum of 3 credits in supervised field experience, and a minimum of 7 credits of selected electives.

Courses are chosen in consultation with an adviser from one of the participating departments: Education; Food Science and Technology; Human Development, Counseling and Family Studies; Nursing; Physical Education, Health and Recreation; Psychology; Sociology; Speech Communication; Textiles, Fashion Merchandising and Design; Theatre. The College of Human Science and Services administers the program and interested students should contact the program head, Jeannette E. Crooker (130 Tootell Center) for more information and a complete listing of possible electives.

**Textile Marketing.** This undergraduate interdepartmental curriculum may be pursued through the College of Human Science and Services (Department of Textiles, Fashion Merchandising and Design) or through the College of Business Administration (Department of Marketing). The programs are: Textile Marketing or Marketing-Textiles.

Textile marketing managers are responsible for planning and directing the flow of textile products from the manufacturer to the consumer. The major, which provides a strong background in both textiles and marketing, is designed to give students the opportunity to explore the areas of styling and design, manufacturing, market research, consumer behavior, advertising, promotion, fashion, and sales. The specific requirements of the curriculum may be found on pages 49 and 68.

**Urban Affairs.** The undergraduate program in Urban Affairs consists of five different interdepartmental degree curriculums: three in the College of Arts and Sciences and two in professional colleges. They aim to provide students with a general understanding of contemporary urban society and the opportunity to pursue specialized study of urban problems and prospects from the perspective of varied disciplines, whatever may be the students' interests and career objectives.

The five majors are: (1) Urban Social Processes, (2) Policy Formation, and (3) Spatial Development, in the College of Arts and Sciences; (4) Home Economics in the Urban Environment, in the College of Human Science and Services, and (5) Resource Development in the Urban Environment, in the College of Resource Development.

The curriculum in each major consists of common core courses and specialization courses. The common core (18 credits) is made up of the following requirements: URB 210 and URB 498 or 499 (6 cr.); three credits selected from CSC 201, EST 220, 408 or 409, PSY 300, SOC 301; and 9 credits selected from CPL 410, ECN 402, SOC 214, PSC 460, HIS 363. The specialization courses are detailed in the appropriate college section in this bulletin.

The Urban Affairs Program is coordinating its offerings with the Department of Social Sciences at the Community College of Rhode Island. Students at the junior college are encouraged to consult with their advisers if they wish to transfer to any one of the majors in the College of Arts and Sciences.

The Urban Affairs Program Coordinating Committee includes faculty members from departments throughout the University and supervises the operation of the program. With the endorsement of the faculty of the college concerned, the committee certifies completion of the major requirements for the appropriate undergraduate degree. A member of the committee serves as adviser for each of the five majors and provides interested students with information.

**Women's Studies.** This program is designed for students who are interested in the interdisciplinary study of the culture and experiences of women. Courses are currently offered in four different colleges and eleven different departments in order to provide a wide perspective. For a complete description of the curriculum see page 44.

## Preprofessional Preparation

Competition for places in graduate professional schools is keen, and a superior academic record throughout college is necessary for admission to these schools. Since requirements for the professional schools vary in their "essential" and "recommended" subjects, the student should consult the catalog of the professional school and then plan his or her undergraduate program accordingly. Those seeking careers as social workers may enroll as majors in sociology, including in their curriculum the social welfare courses. A basic foundation for graduate study,

whether directed toward college teaching or research careers, can be provided through any of the liberal arts or science majors. The bachelor of arts curriculum provides specific majors for those planning to become journalists or public school teachers.

**Prelaw Studies.** For students who plan professional study of law, guidance and program advice are provided by departmental advisers assigned in University College and by major advisers within various departments and colleges.

Students interested in law school should consult the *Prelaw Handbook*, prepared by the Association of American Law Schools and the Law School Admissions Council. The association finds it inappropriate, given the wide range of a lawyer's tasks, to prescribe either a set of prerequisite courses for prelaw students or preferred major departments. Rather, it recommends that students choose their majors dependent upon their own individual intellectual interests and upon "the quality of undergraduate education" provided by various departments and colleges. "Shortly stated, what the law schools seek in their entering students is . . . accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." The association emphasizes that "the development of these fundamental capacities is not the monopoly of any one subject-matter area, department or division."

**Premedical Studies.** For students who plan professional study in medicine, guidance and program coordination is provided by the premedical adviser and the URI Premedical, Predental, Pre-veterinary Advisory Committee (Rm. A123, Biological Sciences Bldg.).

The student should consult the prerequisites for professional schools to which he or she may expect to apply for admission. These are listed in *Medical School Admission Requirements*, published annually by the Association of American Medical Colleges.

Medical schools generally require at least a 3.3 grade point average and high scores on the required Medical College Admission Test (MCAT), taken preferably in the spring semester of the third undergraduate year.

The new MCAT was given for the first time in the spring of 1977. From an





evaluation of the distribution of scores after this first administration of the test, it is reasonable to assume that successful applicants to medical schools will rank in the intervals above 10 in the 15-interval scoring system.

All candidates must have personal interviews with the Premedical, Predental, Preveterinary Advisory Committee. Normally these interviews will take place during the spring semester of the third undergraduate year.

Since only about one third of each 100 applicants to medical schools are admitted, it is wise to plan for an alternative career.

**The University of Rhode Island-Brown University Early Identification Program for Rhode Island Residents.** This is a plan for the early identification and acceptance into the program in medicine at Brown University of highly motivated, exceptionally qualified and interested students at the University of Rhode Island and at Providence College. The plan offers virtual assurance of a position in Brown's program in medicine, so long as the student completes the required courses and maintains a good academic performance. The program is designed to encourage a few of the most highly motivated students, who are Rhode Island residents, to make an early commitment to the study of medicine at Brown by providing them with acceptance assurance similar to that afforded students enter-

ing Brown's optional medical education program directly from high school.

URI students with cumulative averages of 3.5 and above are interviewed and evaluated by the URI Premedical, Predental, Preveterinary Advisory Committee after the completion of their freshman year. Certain of these students are then recommended by the URI Premedical Advisory Committee on the basis of an excellent academic record, exceptional promise as a premedical student, apparent suitability for the profession of medicine, Rhode Island residency and a desire to study medicine at Brown. During the sophomore year, the nominated students are interviewed and their applications are evaluated for admission to the program.

Upon acceptance, they have the same status as their Brown counterparts, while continuing their studies at the University of Rhode Island. Like the Brown students, they are free to major in the arts or humanities, if they wish, as long as they complete the required premedical courses. As undergraduates they are also invited to take one or two of their premedical courses on the Brown campus with their future classmates, and are invited to colloquiums and various social events sponsored by the Brown Medical Student Society.

After the students in the Early Identification Program have been graduated from URI, at the point of entering the first year of the program in medicine at Brown, they go through the same promotions process required of all medical

education program students. Academic performance, interviews with members of the Admissions Committee, Medical College Admissions Test (MCAT) scores, and faculty recommendations are all reviewed. Upon promotion they become full-fledged first-year medical students at Brown University.

**Predental Studies.** The recommendations for premedical preparation also apply to predental students, who are counseled by the same advisory committee.

The student should consult the course requirements for each dental school to which he or she may expect to apply for admission. These are listed in *Admissions Requirements of American Dental Schools*, published annually by the American Association of Dental Schools.

The Dental Admissions Test (DAT) is required, and normally this test is taken in the spring of the third undergraduate year. Competition for admission into dental school is as keen as that experienced by premedical students. Thus, an excellent academic record, along with a 5 or 6 in each section of the test, usually is required.

Each candidate must have personal interviews with the URI Premedical, Predental, Preveterinary Advisory Committee. Normally these interviews will take place during the spring semester of the third undergraduate year.

#### **Premedical and Predental Curriculum.**

A premedical or predental student may choose to study in any liberal arts or science curriculum, so long as the courses that are required by medical schools are included. Most students major in one of the biological or health sciences or in a related field, such as pharmacy or chemistry.

A recommended course of study is outlined below. Italicized items are indispensable for admission to any medical or dental school. Ideally, these courses, or their equivalents, should be substantially completed before the MCAT or the DAT is taken.

**Chemistry.** At least 16 semester-hour credits, including general inorganic, qualitative and quantitative analysis, and organic; physical chemistry is sometimes required and is frequently recommended: CHM 101, 102, 112, 114, 212, 227, 228, 226; and in some



cases 431 and 432, each with the associated laboratory.

**Biology.** At least 11 credits, including general animal biology, embryology, physiology or anatomy, genetics: ZOO 111, 316, 321, or 345, BOT 352.

**Physics.** At least 8 credits including PHY 111, 112.

**Mathematics.** At least 6 to 9 credits, through calculus, MTH 141, 142.

**English and Communications.** At least 12 credits, including WRT 101, 102 and a year of literature.

**Modern Foreign Language or Greek or Latin.** Through the intermediate level.

**Social and Behavioral Studies.** At least 6 credits. Psychology: PSY 113. Sociology: SOC 100.

**Preveterinary Studies.** Students who are interested in preparing for a professional career in veterinary medicine are counseled by the URI Premedical, Predental, Preveterinary Advisory Committee. Requirements for admission into the study of veterinary medicine vary and the catalogs of veterinary schools should be consulted for specific requirements early in a student's undergraduate years. Many schools require the Veterinary Aptitude Test (VAT) or the Graduate Record Exam (GRE). Ordinarily, either test should be taken in the spring semester of the third undergraduate year. Moreover, some experience in the animal sciences is expected by some veterinary medical schools.

A preveterinary student may choose to follow the Bachelor of Science curriculum in Animal Science (described elsewhere in this Bulletin), or he or she could be guided by the course of study recommended above for premedical and predental students.

Each candidate must have personal interviews with the URI Premedical, Predental, Preveterinary Advisory Committee. Normally these interviews will take place during the spring semester of the third undergraduate year.

Competition for admission into schools of veterinary medicine is extraordinary. Therefore, evidence of high motivation and an outstanding academic record are essential.

## Special Academic Opportunities

**Honors Program.** The University Honors Program offers bright and motivated students opportunities to broaden their intellectual development and to strengthen their preparation in their major fields of study. The program consists of honors courses for freshmen, an honors colloquium for sophomores, tutorial courses for juniors and individual honors projects or special seminars for seniors. The courses offered in the first two years treat general topics and usually count toward the satisfaction of General Education requirements. The courses offered in the last two years are specialized in nature and count towards the satisfaction of major requirements. Eligibility standards are established yearly by the Honors Program and Visiting Scholars Committee.

Eligible students may participate in the Honors Program in two different ways: on an occasional basis, registering for courses which particularly interest them; or on a regular basis, meeting the specific requirements to receive the transcript notation, "Completed the University Honors Program." In the former case, a student may register for any number or pattern of courses he or she chooses. In the latter case, a student must complete at least 15 credits of coursework in the Honors Program and attain a QPA of 3.3 or better for these courses as well as a 3.0 QPA overall. These courses must include: 1) two semesters (6 credits) of work offered in the first and second years including one semester (3 credits) of the Honors Colloquium; and 2) three semesters (9 credits) of work offered in the third and fourth years including one semester of 3rd year tutorial (3 credits) and two semesters of the fourth year honors project or special seminar (6 credits).

Students who wish to complete the program and graduate with honors must begin their participation no later than the beginning of the third year in the undergraduate program. Students who enter the program at the third year level may register for one or two semesters of the Honors Colloquium during their third year.

**National Exchange Programs.** The National Student Exchange Program offers University of Rhode Island students the opportunity to study at 70

participating state colleges and universities in 38 states at in-state rates or URI tuition while maintaining their status as URI students. NSE offers the opportunity to explore new geographical areas, experience academic diversity, and study under different educational and social circumstances in various parts of the United States. Financial aid is available to participants in this program. For further information, contact the National Student Exchange Coordinator, University College.

**New England Land-Grant Student Exchange Program.** Students with special academic interests may now take advantage of the talent and resources available at the state universities of the region without having to become a degree candidate at another institution. Under a cooperative agreement, URI students can study for one or two semesters at the other New England land-grant institutions if they wish to take a course, a sequence of courses, or part of a program which is not available at URI. Students participating in this program pay their normal URI tuition and fees and maintain their status as URI students. Advisers or members of the University College staff have more information about this program and its requirements.

**Study Abroad.** The Study Abroad Office in University College maintains information about overseas study programs and helps students make arrangements for foreign study. The Office also assists in the evaluation of credits from study abroad. The University of Rhode Island sponsors exchange programs with universities in England, France, Germany, and Japan which make study abroad available to our students for little or no cost beyond the normal URI tuition and fees. The University also participates in the New England-Quebec exchange program enabling our students to study at any one of the ten English and French-speaking universities in Quebec on an exchange basis. Study abroad programs at the other New England land-grant universities and at institutions participating in the National Student Exchange program are also open to our students. The Study Abroad adviser helps students who wish to participate in these or other approved academic programs to choose

the appropriate programs and to handle the procedures for obtaining prior approval for courses to be taken abroad and for retaining matriculated status at the University of Rhode Island during their absence from campus.

**University Year for Action.** Administered by the dean of the University College, this program provides a full-time one or two semester internship experience for students interested in public service careers. It is especially designed for the gifted student who wishes to combine classroom learning with a field experience apprenticeship. Students may apply from any undergraduate curriculum which permits 15-30 credits of free electives to be used for an internship. Placements are available in mental health, social services, community planning, urban affairs, nutrition, women's studies, law, public health, resource management, and many other fields. To apply, students must have junior or senior standing and a minimum QPA of 2.5.

### Dean's List

Undergraduate students who have achieved certain levels of academic excellence in any semester are honored at the end of that semester by inclusion of their names on the Dean's List. The Registrar will publish lists of students who have attained the required quality point average.

A student may qualify for the Dean's List if he or she has completed 12 or more credits for letter grades and achieved a 3.3 quality point average.

### Pass-Fail Grading Option

This plan encourages undergraduate matriculated students to increase their intellectual breadth and discover aptitudes in new areas of knowledge. A student above the freshman level who is not on probation may register under this plan for courses considered by the college in which he or she is enrolled as free, unattached electives. Courses that are stipulated in the student's curriculum as degree requirements, General Education requirements, and military science courses may not be included.

A student choosing to take a course under this plan must notify his or her



adviser, academic dean and the Registrar's Office in writing, prior to the end of the add period of each semester. The instructor is not informed.

Grades will be P (pass) or F (fail). The P grade is credited toward degree requirements, but not included in the quality point average. The F grade is calculated in the same manner as any other failure. If a student has selected the P/F option for a course, then decides not to use the P/F option, he or she may change by notifying the Registrar before the last date for dropping courses.

A student may elect not more than three P/F courses each semester and not more than two P/F courses during a summer.

### Reserve Officers Training Corps (ROTC)

The Military Science Department offers the ROTC Program which enables any college student to earn a commission in the United States Army while simultaneously earning a college degree. A four-year program introduces the military science student to military history, international relations, leadership, management, and the principles of effective organization. To qualify for the advanced ROTC program (junior/senior year) a student must earn 7 credits in basic military science

courses (100 or 200 level courses.) A laboratory period allows students to put into practice the theory presented in academic instruction. Credit toward graduation is received for all classroom instruction and, for the final two years of instruction, each student receives a monthly stipend of \$100. A student may compete for Army ROTC scholarships whether or not they are enrolled in ROTC courses.

A modified two-year program is available to sophomores and graduate students which substitutes a six-week summer training period for the first two years of ROTC study. An ROTC graduate has the option to serve a tour of duty in the Active Army or a part-time tour in the Army Reserve, Army National Guard or the Individual Ready Reserve.

### Grades and Points

Student grades are reported as A, A-, B+, B, B-, C+, C, C-, D+, D, and F. The unqualified letter grades represent the following standing: A, superior; B, good; C, fair; D, low grade, passing; F, failure; S, satisfactory; U, unsatisfactory.

Grades are given quality point values as follows: A, 4.0 points; A-, 3.7 points; B+, 3.3 points; B, 3.0 points; B-, 2.7 points; C+, 2.3 points; C, 2.0 points; C-, 1.7 points; D, 1.0 points; F

and U, 0 points. P and S are not calculated in the quality point average.

A grade may be reported as "incomplete" only when coursework has been passing but has not been completed due to illness or another reason which in the opinion of the instructor justifies the report of incomplete. Incomplete grades that are not removed from an undergraduate student's record by the following mid-semester will remain on the student's permanent record.

Making up failures in elective courses is not required, but making up failures in required courses is. The course should be repeated when next offered. No limit is placed on the number of times a course may be repeated, but the credit requirement for graduation is increased by the number of credits repeated.

Under specified conditions and with the approval of the academic dean, freshmen and transfer students in their first semester may repeat a course in which a grade of C- or lower was earned, and have only the grade earned in the second attempt calculated in their quality point average. All grades earned for a given course will remain on the student's permanent academic record.

Certain courses do not lend themselves to precise grading and for these courses, only S (satisfactory) or U (unsatisfactory) shall be given to all students enrolled. S/U courses shall be labeled as such in the University catalogs and bulletins. S/U courses are not counted as courses taken under the Pass-Fail Option.

**Probation and Dismissal.** A student shall be placed on scholastic probation if the student's overall cumulative scholastic average falls below 2.0. For purposes of determining probation and dismissal of part-time students, scholastic standing committees shall consider an accumulation of 12 credits as the minimum standard for one semester's work.

A student shall be dismissed for scholastic reasons when he or she has a deficiency of eight or more quality points below a 2.0 average after being on probation the previous semester. A student on probation for the second successive semester who has a deficiency of eight or fewer quality points below a 2.0 average will continue on probation. Students who obtain less

than a 1.0 average on their first semester shall be dismissed automatically.

A student subject to dismissal shall be so notified by the dean after which he or she shall have five days to file a written appeal with the dean.

Students are expected to be honest in all academic work. Instructors shall have the explicit duty to take action in known cases of cheating or plagiarism. For details consult the *University Manual*, sections 8.27.17, 18, 19, and 20.

### Leave of Absence

Sometimes students are forced to take a semester or two off by circumstances beyond their control. Others find they simply need a break from studying. For these students taking a leave of absence might be wise. Students who have an approved leave of absence for a semester or a year may pre-register for the semester in which they plan to return, and they do not have to apply for readmission. Students may apply for a leave of absence through the Perspectives Program, Office of Counseling and Student Development, Roosevelt Hall.

### Withdrawal from College

A student who wishes to withdraw from college prior to the end of the semester or Summer Session term shall do so according to procedures outlined in the semester's Schedule of Courses. Students who withdraw from the University after the last day of classes but before a semester ends shall be graded in all courses for which they are officially registered. If the withdrawal process is completed satisfactorily and the student has cleared all financial obligations to the University, the date of withdrawal shall be noted on the student's permanent academic record. No grades for the current semester shall be recorded. If a student withdraws from the University after mid-semester, grades shall be recorded for any course which has an officially specified completion date prior to the date of withdrawal.

A student who withdraws from the University after mid-semester and who seeks readmission for the next semester shall be readmitted only upon approval of the Scholastic Standing Committee for the college or school in which registration is desired.

## Undergraduate Graduation Requirements

To graduate, a student must have completed the work for, and must have achieved the minimum quality point average established by, the curriculum in which he or she is enrolled and must have earned at least a 2.0 quality point average.

The work of the senior year shall be taken at the University of Rhode Island. Exceptions must be approved by the faculty of the college in which the student is enrolled.

Any student who has met the requirements for a second bachelor's degree and has completed an additional 30 hours of credit beyond the minimum requirements for the initial degree may be granted two bachelor's degrees.

Any student who has met the requirements for two separate majors within any single bachelor's curriculum has earned a double major and may have both fields listed on their permanent record.

Students who complete at least 60 credits of their work at the University are eligible to graduate with distinction. Those who attain a cumulative quality point average at the time of graduation of at least 3.3 shall be recognized as graduating "with distinction." Those who achieve a quality point average of at least 3.5 shall graduate "with high distinction" and those who attain a quality point average of at least 3.7 "with highest distinction."

## University Manual

University regulations governing matters such as grading, probation and dismissal, academic integrity, withdrawal from college, and graduation requirements are fully explained in the *University Manual*. Copies of the *University Manual* are available in the Library and in the deans' offices.

# Admission and Registration

## Admission to the University

Ideally, admission to the University is a mutual selection process. It is hoped that those students who seek admission will also be the kind of students sought by the University: those who will benefit from the educational opportunities afforded by the University, those who will be stimulated and challenged by doing undergraduate work in an environment that includes scholarly research and graduate study; those who are committed to becoming contributing members of the University. Students are selected for enrollment primarily on the basis of their academic competence and without regard to age, race, religion, color, sex, creed, national origin, or handicap.

Candidates must meet the unit requirements of the University College as listed below for entrance to the University. Furthermore, to meet the requirements for entry to any of the other colleges in the University at the sophomore or junior level, applicants must complete the additional units recommended by the particular college to which transfer is intended. See page 28 for description of the University College.

Applicants are given individual consideration, but it is expected that all candidates will offer 16 units of college preparatory work as outlined below. If these requirements are not fully satisfied by secondary school study, they may be met wholly or in part by successful per-



formance on appropriate examinations administered by the College Entrance Examination Board, the University, or the State Department of Education.

## Unit Requirements

**University College** requires 4 units in English, 2 in algebra and/or plane geometry, 1 in physical or natural science, 1 in history or social science, and 8 additional units as specified below for individual colleges.

**Arts and Sciences** requires 4 units in English, 2 in mathematics (2 in algebra or 1 in algebra and 1 in plane geometry), 1 in physical or natural science, 1 in history or social science, 2 in any single foreign language, and 6 additional units. Majors in chemistry and physics require 4 units of mathematics.

**Business Administration** requires 4 units in English, 4 in mathematics including algebra, plane geometry, and trigonometry, 2 in a single foreign language, 1 in physical or natural science, 2 in history or social science, and 3 additional units.

**Engineering** requires 4 units in English, 4 in mathematics (algebra, plane and solid geometry, and trigonometry), 1 in physics and 1 in chemistry, 3 in history, social science and/or foreign language, and 3 additional units.

**Human Science and Services** requires 4 units in English, 2 in algebra and/or plane geometry, 1 in physical or natural

science, 3 in history, social science, and/or foreign language, and 6 additional units.

**Nursing** requires 4 units in English, 2 in algebra and/or plane geometry, 2 in physical or natural science, 1 in history or social science, and 7 additional units.

**Pharmacy** requires 4 units in English, 3 in algebra and plane geometry, 2 in physical or natural science, 1 in history or social science, and 6 additional units.

**Resource Development** requires 4 units in English, 2 in algebra and/or plane geometry, 1 in physical or natural science, 1 in history or social science, and 8 additional units.

It is strongly recommended that additional units be selected from languages, history, mathematics, or science.

**Application Procedures.** Students should discuss their plans for study at the University with their academic counselors as early as possible to establish realistic goals and program selections. Admissions counselors at the University will be glad to correspond with students on individual problems. Requests for application forms and information should be directed to the Office of Admissions, The University of Rhode Island, Kingston, RI 02881.

Applications and requests for admission information from international students should be addressed to the Director for International Student Affairs, 37 Lower College Road, The University of Rhode Island.

Students are enrolled at the beginning of the fall semester in September and at the beginning of the spring semester in January. High school seniors are urged to submit applications early in their final year of preparatory study as the University subscribes to a "rolling" admissions policy, reviewing folders as soon as complete credentials are submitted. However, some applicants find it to their advantage to hold their forms until senior mid-year grades are available, so that their progress in the last year may be assessed by the Selection Committee. Closing date for fall term applications is March 1, and most decisions are reported in February, March and April. Closing date for spring term application is December 1. (For international students the closing date is November 1.)



Early decision is made on the application of any freshman candidate who has established a superior academic record, who has achieved above-average scores on the CEEB Scholastic Aptitude Test, and whose potential as a superior student is reflected in the secondary school endorsement. Applications which meet these qualifications and which are clearly labeled "Early Decision Candidate" are considered on a priority basis if filed prior to November 1.

Applicants to the Bachelor of Music degree program must audition and must contact the music department for specific requirements.

**Entrance Tests.** All freshman candidates for admission are required to take the Scholastic Aptitude Test. This test is administered by the College Entrance Examination Board. Applicants who have been away from formal studies for at least three years should contact the Admissions Office concerning entrance requirements.

Applicants are encouraged to take the SAT as early as possible in their senior year; delay beyond January date materially reduces a candidate's prospects for a timely decision. Full information concerning this test may be obtained from local high schools or by writing to CEEB Headquarters at P.O. Box 592, Princeton, New Jersey 08540.

International students who are not immigrants must take an English proficiency test administered by the American Consulate or the Test of English as a Foreign Language (TOEFL) administered by the Educational Testing Service, Princeton, New Jersey 08540, U.S.A. Additionally, the Scholastic Aptitude Test is required as outlined above. English placement tests are required of all incoming undergraduate students.

**Interviews.** Personal interviews are not part of the normal admissions procedure. It would be impossible for the admissions staff to interview all candidates, and individual conferences are arranged only if a unique problem requires personal discussion.

Group conferences are scheduled several afternoons each week during the fall and early winter months. Students and their parents are invited to participate in these meetings to get acquainted

with the University. Visitors are requested to phone ahead (401-792-2164) to be scheduled for these meetings.

**Campus Tours.** The University provides daily tours of the campus for visitors, Monday through Saturday, while classes are in session. The tours are conducted by students. Group tours for high schools and other organizations may also be arranged. For more information about this service, phone (401) 792-2737.

**Early Enrollment (Early Admission).** Students who have completed their junior year of high school with superior records are eligible for early admission. A part-time study program may be arranged for students who wish to begin college study in their senior year while continuing their high school work. A full-time program may be arranged for those recommended for college admission without completion of the standard preparatory program.

Early admission students would normally have completed: 3 years of English, 3 years of mathematics, 2 years of foreign language, 2-3 years of social studies or history. Students should be academically competitive within their high school class, have corresponding scores on the College Board PSAT, SAT or equivalent tests, and the endorsement of their school.

Interested persons should plan with their high school counselor early in their junior (11th) year and direct further inquiries to the University Admissions Office.

### Advanced Standing

Advanced placement for freshmen is granted to students who have completed college-level courses in a high school participating in the Advanced Placement Program and have passed with a grade of 3 or better the CEEB Advanced Placement Examination in the subject area for which advanced placement is sought. In addition, students also may take proficiency examinations administered by departments of the University to be granted advanced placement. Entrance with advanced standing can accelerate the completion of degree requirements, or it can enrich the undergraduate program with greater scope for elective or advanced courses.

Transfer students who have attended, or are attending another college or university, are required to have official transcripts sent directly from the institution, whether or not they expect or desire credit for such work; their high school record must also be submitted. Most successful applicants offer a cumulative grade point average above 2.4. Certain programs may require a higher grade point average or specific prerequisite courses. Candidates accepted with transfer credit are classified as freshmen, sophomores, juniors, or seniors according to the number of credits accepted for transfer. The transfer of General Education credits is described on page 9.

**Proficiency Examinations.** Students who show evidence of advanced knowledge or who have taken "enriched" programs in high schools may be exempt from certain courses and requirements if they take departmental proficiency examinations. A student who successfully passes such an examination earns credits as well as exemption from the course.

Upperclassmen interested in taking these exams should contact their academic dean. New students may obtain further information during the orientation or from their assigned adviser in University College.

### College Level Examination Program.

**CLEP General Examinations.** Students who have not been pursuing formal studies for at least three years may take the CLEP General Examinations to demonstrate academically measurable learning acquired in non-traditional ways. URI students must secure prior approval from their academic dean to take the exams for credit. Transfer students may receive credit from CLEP General Examinations taken prior to enrollment at URI provided that their scores meet URI standards and provided that their academic dean judges that the CLEP credit does not duplicate other transfer credit.

CLEP General Examinations may be taken in the following areas (URI credits for these are shown in parentheses):



	Minimum score			
English Composition (English composition elective 3 credits <sup>1</sup> )	560	Elem. Comp. Prog./ FORTRAN IV (MGS 107)	51	50th
Fine Arts (Fine Arts elective, 3 cr.)	46	English Literature (ENG 251, 252)	46	38th
Literature (Literature elective, 3 cr.)	45	General Chemistry (CHM 101, 102, 112, 114)	47	45th
Biological Sciences (Natural science elective, 3 cr.)	46	General Psychology (PSY 113)	47	39th
Physical Sciences (Physical science elective, 3 cr.)	44	History of American Education (EDC 102)	46	36th
Social Sciences (Social science elective, 3 cr.)	46	Human Growth & Devel. (HCF 200 or PSY 232)	47	38th
History (History elective, 3 cr.)	45	Intro. to Business Management (MGT 301)	50	50th
Mathematics (no credit)		Introductory Accounting (ACC 201, 202)	N/A	50th

**CLEP Subject Examinations.** Academic departments may use CLEP Subject Examinations as proficiency exams to test students' mastery of the subjects taught by the department. A department which judges a CLEP Subject Examination to be a satisfactory proficiency exam decides what credit should be awarded within the department to students who pass the exam, establishes the minimum score for credit, decides whether students must answer the optional essay questions supplied by CLEP, and decides whether students must pass a supplementary department test, such as a lab exam. The following CLEP Subject Examinations are accepted by departments as proficiency examinations.

Subject (URI credit)	Minimum raw score	Minimum percentile
Afro-American History <sup>2</sup> (HIS 150)	49	47th
American Government (PSC 113)	47	38th
American History <sup>2</sup> (HIS 141, 142)	45	40th
American Literature (ENG 241, 242)	46	37th
Analysis & Interp. of Lit- erature (ENG or WRT 103)	49	43rd
Biology (BIO 101, 102)	49	47th
Calculus w. Anal. Geom. (MGS 102)	49	50th
College Algebra-Trig. (MGS 101 or MTH 109)	49	50th
Educational Psychology (EDC 312)	47	40th

<sup>1</sup>Three additional credits may be earned by completing a writing sample test administered by the College Writing Program.

<sup>2</sup>Optional essays required

<sup>3</sup>Department lab test required

Microbiology <sup>3</sup> (MIC 201)	48	45th
Statistics (MGS 201)	51	50th
Tests and Measurements (EDC 371)	46	37th
Western Civilization I <sup>2</sup> (100-level HIS elective)	46	52nd
Western Civilization II <sup>2</sup> (100-level HIS elective)	47	52nd

**Readmission.** Students formerly enrolled at the University and seeking reentry may obtain applications for readmission at the Office of the Registrar. Readmitted students are subject to a \$15 application fee and must make a \$50 advance deposit. All applications for readmission must be submitted to the Office of the Registrar no later than August 15 for the fall semester and December 31 for the spring semester.

**Health Questionnaire.** Every newly entering student is provided a health questionnaire from University Health Services. It is expected that these questionnaires will be completed and returned promptly. This questionnaire provides University Health Services with basic information prior to the student's arrival on campus. Questionnaires are distributed only after admission to the University and therefore play no part in the process of acceptance to the University.

In accordance with Section 16-38-2 of the General Laws of Rhode Island, the University must have a certificate signed by a licensed physician giving proof of rubella (German measles) immunity for each new female student between the ages of 15 and 35.

### New England Regional Student

**Program.** Under the cooperative plan of the New England Board of Higher Education (NEBHE), students from other New England states are admitted to certain curriculums at the University of Rhode Island which are not offered in their own states. Certain programs at other New England state universities are open to Rhode Islanders on a reciprocal basis. Regional students at the University will be charged the in-state fee plus a surcharge of 25 percent. However, if the student transfers out of the program of study that qualifies under the New England Regional Student Program, out-of-state fees will apply. Details on the operation of this program are available on request from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111, or high school guidance offices. The Office of the Registrar provides information pertaining to this program for students who are already enrolled at the University.

Prospective students who wish to claim eligibility for this program must state so in the appropriate section on their application for admission. Continuing or returning students claim eligibility by contacting the Registrar's Office with a formal request prior to the end of the add period of the semester in which regional status is to be effective.

### Special Program for Talent Develop-

**ment.** The University encourages the application of economically and socially disadvantaged individuals from Rhode Island and has instituted a pre-matriculation program designed to assist such applicants whose education is below college preparatory level. There is special financial provision for students in this program. Interested individuals should apply to Special Programs for Talent Development, Taft Hall, as early as possible in their senior year in high school. High school graduates or those with an equivalency diploma are also encouraged to apply.

### Registration

All students must register for courses at the Registrar's Office in order to be properly enrolled.

**Preregistration.** The University pre-registers matriculated (official degree-seeking) students who meet the eligi-

bility requirements as defined in the *Schedule of Courses*. Preregistration generally occurs in March and October for the following semester. However, freshmen entering in the fall semester preregister at specified dates during the summer. Additional information is available from the Office of the Registrar.

**Registration Day.** This is held the day before classes begin for both the spring and fall semesters. All matriculated students who did not preregister (or who did not receive a final schedule) must register at Keaney Gymnasium on this day.

**Late Registration.** Generally, students are expected to either preregister for courses (if eligible) or to register on registration day. Those who are unable to do so may enroll as late registrants in the Office of the Registrar during the first two weeks of classes. A late registration fee shall be charged unless excused by the Registrar (see p. 21).

**Non-matriculated Students:** Such students must apply each semester to the Registrar's Office for permission to enroll and for registration instructions. Registration takes place during the first week of classes.

**Payment of Fees.** Arrangements must be made with the Bursar for complete payment of tuition and/or fees. If, at any time during the semester, it becomes apparent that a student has not met his or her financial responsibilities with the University, the registration for that semester is subject to immediate and irrevocable deletion.

**Drop and Add.** Students are permitted to add courses during the first two weeks of classes only. Courses offered by the College of Continuing Education may be added prior to the third class meeting or by the prescribed University deadline, whichever is later.

A course may be dropped by official procedures determined by the Registrar before the end of the fifth week of the semester. Departments shall have the authority to designate selected courses as "early drop" courses which may be dropped up to two days before the end of the add period. Early drop courses will be designated in the *Schedule of Courses*. When such courses are offered by the College of Continuing Education they may be dropped at any time prior

to the third class meeting or by the prescribed University deadline, whichever is later. Graduate students may drop courses at any time up to mid-semester. If the student has not dropped a course by the end of the drop period the instructor must submit a grade. A student may drop a course after the end of the drop period only in exceptional circumstances and only with authorization of the dean of the college in which the student is enrolled.

**Auditing.** Auditors are persons who have permission to attend a course but are not taking the course for credit. Auditing is not permitted in non-credit courses. An auditor may be admitted to a class on a space-available basis with the consent of the instructor as indicated by the instructor's signature on an audit authorization form which must be filed in the Office of the Registrar before the end of the "add" period. The course instructor shall determine the extent to which an auditor may participate in class activities. An auditor's name shall not appear on official class rosters, on the grade report, or on the permanent academic record.

**Flexible Scheduling.** Simultaneous enrollment in Kingston classes and College of Continuing Education classes may give scheduling flexibility to students with special time and location restrictions. Students should consult their academic adviser or college dean for further information.

**Off-Campus Study.** A full-time student who wishes to study at another college or university and use that coursework to satisfy graduation requirements at the University of Rhode Island must register for off-campus study with the Registrar to ensure that grades and credits will be accepted. The student must obtain signed approval for the off-campus courses from the dean of his or her college. Off-campus study includes summer sessions, one or two semesters at another American university, or study abroad. A student may not ordinarily study off campus during the senior year. Students who wish to maintain registered status and preregistration eligibility while studying off campus, must register for off-campus study for each semester of absence from the University of Rhode Island campus.

**Veterans' Educational Benefits.** Full information describing these benefits may be obtained from your base education officer or from the Veterans Administration Regional Office, 321 South Main Street, Providence, Rhode Island 02903. A toll-free number is available for inquiries by asking the long distance operator for Enterprise 5050.

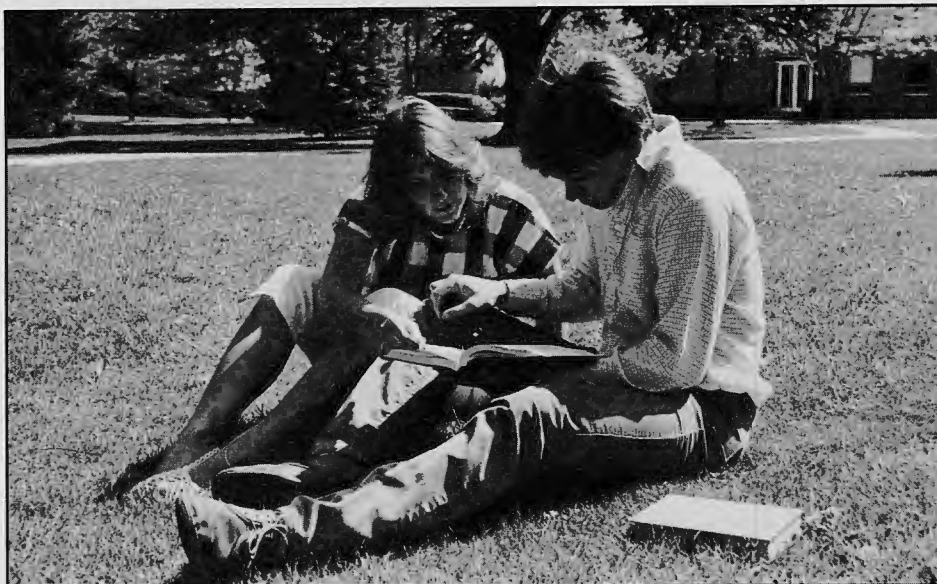
Veterans who are eligible and who wish to receive VA educational benefits must notify the Office of the Registrar in person. In order to satisfy Veterans Administration regulations, all students who receive VA educational benefits must report all changes in academic status to the veterans' registration clerk in the Office of the Registrar.

Recipients of VA educational benefits are also governed by the same University policies as all other students and are, therefore, responsible for completing those procedures described in the *Schedule of Courses* for effecting changes of status (adding and dropping courses, changing address, withdrawing from the University, etc.).

The *University Manual*, the *Graduate Student Manual*, and the *Students' Guide to URI* further explain the University's policies and procedures concerning the following: 1) the grading system and standards of progress required of the student by the University and the conditions for dismissal for unsatisfactory grades; the allowed probationary period, and the conditions of reentrance for academically dismissed students (See: *University Manual*, Chapter 8; *Graduate Student Manual*, Appendix A; *Students' Guide to URI*, Section 2). 2) the records of academic progress maintained by the University and furnished to the student (See: *University Manual*, Chapter 8; *Graduate Student Manual*, Appendix C; *Students' Guide to URI*, Section 2). 3) the policies and regulations relating to student conduct and conditions for dismissal for unsatisfactory conduct (See: *University Manual*, Chapters 5 and 6; *Graduate Student Manual*, Appendix A; *Students' Guide to URI*, Section 2).

**Change of Address.** It is the responsibility of the student to complete a change of address form in the Office of the Registrar whenever a change is made in his or her local, or home mailing address.

# Expenses and Student Aid



## Expenses

Charges and fees set forth in this bulletin are subject to change without notice.

In addition to the University fees outlined below, a student should expect to spend about \$330 per academic year for books and supplies, and allow for additional expenditures for travel and personal needs.

All charges are payable by the semester and are due and payable on receipt of the bill or by the due date indicated on the bill. Checks or money orders should be made payable to the University of Rhode Island.

### Full-time Students Pay Per Year

In-state fee (General fee)	\$1,386.00
Out-of-state fee	4,862.00
Regional student fee <sup>1</sup>	1,733.00
Memorial Union fee	141.00
Student Activity tax	48.00
Accident and sickness insurance	95.00
Student Health fee	156.50
Registration fee	20.00

### Students Living in University Residence Halls Add

Room Rent	\$1,739.00 to \$1,909.00
Board — Monday breakfast through Friday dinner (15 meals)	1,254.00
or Monday breakfast through Sunday noon (20 meals)	1,464.00

### Students Living in a Fraternity or Sorority Add

Average room rent	\$1,472.00
Average board	1,342.00

### Part-time Students

Part-time students, registered for up to 11 credit hours per semester are charged the fees below:

Tuition, per credit hour	
Rhode Island residents	\$58.00
Out-of-state students	\$203.00
Regional students <sup>1</sup>	\$73.00
Registration fee per semester	\$10.00
Memorial Union fee, 1-4 credits	10.50
5-11 credits	21.00
Student Activity tax	12.00

**Credit Overload Fee.** A credit overload fee is charged to all students who register for more than 18 credits per semester. It is assessed according to residency and is charged per credit above the 18-credit limit. Enrollment at the Kingston and Providence locations is combined when determining this fee.

**Kingston and CCE Enrollment.** All students who are full time because of combined enrollment at both the College of Continuing Education and the Kingston campus (12 credits and over) are assessed the following fees at the standard full-time rate when enrolled in at least 7 credits on the Kingston campus: Memorial Union fee, Student Activity tax, Accident and Sickness insurance, Student Health fee. Students

whose enrollment at the Kingston campus is less than 7 credits are charged the fees at the part-time rate.

**Resident Student Status.** A student who is a resident of the state of Rhode Island pays the in-state fee, but a student from another state or a foreign country who is in Rhode Island primarily for educational purposes, even though he or she remains in the state during vacation periods, is considered a non-resident and pays the out-of-state fee.

The parents or legal guardians of a minor student must have been residents of the state for one year immediately preceding the first class day of the first term of a student's registration for that student to claim resident student status.

An "emancipated student" must establish the same bona fide residency for in-state tuition exemption. An emancipated student shall mean a student who has attained the age of 18 years, and whose parents have entirely surrendered the right to the care, custody, and earnings of the student and have not claimed the student as a dependent for tax purposes for two years. If any of these conditions is not met, he or she is presumed to be an unemancipated student. A non-resident student who reaches 18 years of age while a student does not by virtue of that fact alone become a resident student.

Dependents of members of the armed forces, as well as members of the armed forces stationed in the state on military

<sup>1</sup>See page 18 for description of the NEBHE interstate program.

orders, are entitled to classification as resident students.

The Director of Admissions classifies each student admitted to the University as a resident or non-resident student on the basis of all relevant information available to him. A student may appeal the decision to the Board of Residence Review. The above information is merely a summary of the regulations governing student classifications for tuition purposes. The complete text of the regulations adopted by the Board of Governors for Higher Education may be obtained from the Office of Admissions.

#### **Tuition Waiver for Senior Citizens.**

Permanent residents of Rhode Island who are 60 years of age or older are entitled to take courses at the University without payment of tuition, although other fees and charges are still applicable. Admission to particular courses will be granted on a space-available basis. Eligible persons should contact the Office of the Registrar.

**New Student Fees.** A nonrefundable fee of \$15 must accompany each application for admission. See page 16 for application procedure.

An advance deposit of \$50 is required from every accepted student. The advance deposit, which is applied on the first term bill, will be forfeited if the applicant later withdraws his or her name.

Students returning after an absence of one or more semesters are subject to the same application fee and advance deposit as entering freshmen.

**Student Assessments.** Each student is assessed \$48 per year which is distributed by the Student Senate to support a wide variety of student programs and activities. A Memorial Union fee of \$141 per year is also assessed.

**Late Fees and Special Fees.** A late registration fee is charged to students whose registration is not completed before the first day of classes. The fee is \$15 during the week in which registration day falls; \$50 thereafter.

Expenses for class trips in all courses and those incident to practice teaching in vocational education courses are charged to the students concerned.

**Applied Music Fees.** Students taking performance courses in music are charged an additional fee each semester

of \$60 for 0 credit, \$80 for 2 credits, and \$120 for 3 and 4 credits.

**Student Nurses' Fees.** Beginning in the sophomore year, student nurses must purchase authorized uniforms and nursing equipment. The approximate cost is \$175.

**Transcripts.** Each student who graduates from the University is entitled to one official transcript without charge. The fee for all other transcripts is \$2, except that the fee for multiple copies ordered at the same time is \$2 for the first copy and \$.50 for each additional copy. Copies will be mailed in response to written requests only, which should be addressed to the Office of the Registrar.

Transcripts will not be issued to students who have any unpaid financial obligation to the University.

**Health Service Fees.** The health fee of \$156.50 is mandatory for all full-time undergraduates, all international students and spouses, and all full-time graduate students. All international students, spouses, and dependents must enroll in the Student Accident and Sickness Insurance Plan. All other students are required to enroll in this plan unless evidence of comparable coverage in another plan is provided and the student completes, signs, and returns a waiver to the Bursar's Office prior to the end of the add period (first two weeks of school). A waiver of insurance is found on the reverse side of the return copy of the term bill. Waiver forms may also be obtained directly from the Office of the Bursar. Part-time students and spouses of students are eligible to participate in the health and insurance plan on an optional basis.

The health fee covers all outpatient care at Health Services with the exception of laboratory and X-ray services. Students must have insurance which covers these services.

**Refunds.** Refunds of payments made or credits against amounts due to the University shall be made to students who officially withdraw or take a leave of absence according to the following scale: during the first two weeks, 80 percent; during the third week, 60 percent; during the fourth week, 40 percent; during the fifth week, 20 percent; after five weeks, none.

The attendance period in which withdrawal or leave of absence occurs is counted from first day of registration and includes weekends and holidays.

Coverage under the University Sickness and Accident Insurance terminates upon withdrawal of the student for any reason other than graduation or incapacitating disability. Students whose coverage has terminated for reason of withdrawal may request a pro-rata refund of premium from the insurance company. (For further information, refer to the current Student Sickness and Accident Insurance brochure.)

**Reassessment of Fees.** Students are allowed to drop and add credits during the first two weeks of each semester (add period). Fees are reassessed and adjusted according to the credit enrollment and/or student status resulting from drop/add transactions as processed by the Registrar during the add period. Subsequent to the add period, term bills are only reassessed for part-time students who add credits and full-time students adding credits beyond the credit overload limit. Note: The dropping of credits after the add period does not reduce term bills.

**Housing Rates.** Following are the rates for University housing for the year 1984-85. For complete information write to the Director of Residential Life, Roger Williams Commons. All rates quoted are for double rooms. For single rooms, where and when available, \$100 per year is added to the double rate. Board is mandatory for students living in residence halls.

#### **Residence Halls**

\$1,739	Adams, Barlow, Bressler, Browning, Hutchinson, Merrow, Peck, Tucker, Weldin
\$1,909	Aldrich, Burnside, Butterfield, Coddington, Dorr, Ellery, Fayerweather, Gorham, Heathman, Hopkins

The average projected room rate for fraternities and sororities for 1984-85 is \$1,472. The average projected board rate for fraternities and sororities is \$1,342.

**Housing and Dining Contract.** University housing is contracted for the entire academic year. A deposit of \$100 is required at the time of filing application



for a room in the residence hall. This deposit will be applied on the first semester bill. A cancellation of the housing application will result in a pro rata credit on the semester bill according to the following schedule: from date of deposit to June 15, \$100; from June 16 to the opening of the residence halls for the academic year, \$62; after that time, no refunds will be made.

All residence hall rates are quoted for the period specified in the contract. Payments are due in full by the published term bill due date each semester or upon receipt of bill from the Office of Residential Life. Checks and money orders are payable to the University of Rhode Island and should be remitted to the Office of the Bursar.

A student vacating his or her assigned quarters before the end of the period under contract will be held responsible for the total charges for the entire period. No refund will be given when a student moves from University quarters to a private home or decides to commute.

All students living in University residence halls are required to purchase a 15-meal contract for three meals a day, Monday through Friday. A 20-meal contract is available at the student's option, and includes three meals a day, Monday through Saturday and brunch and dinner on Sunday.

Dining contracts begin on registration day and expire the last day of final examinations. They apply each day on which the University schedules classes or examinations according to the meal plan purchased. Meals are not served on holidays.

Students who require diets for health reasons must have their local physician submit a request for the special diet, with the diet prescribed, to the director of Clinical Services, University Health Services, each semester. Special diets for other than health reasons cannot be provided.

Parents and guests of students, faculty and staff members, alumni, and guests of the University may purchase guest meal tickets at the dining rooms, or may use student guest coupons from student meal books. Various meal plans are available for commuting students on a semester contract basis. Information is available at the Dining Services main office in Lippitt Hall.

Meal books are issued at registration and billed according to the contract

signed. Only students withdrawing from the University will receive Dining Services refunds. Please refer to scale on page 21.

**Indebtedness to the University.** Failure to make full payment of all required fees or to resolve other debts to the University (for example, unreturned athletic equipment, overdue short-term or emergency loans, lost library books, debts to the Office of Residential Life for damages, obligations required by the University Judicial System) may result in the cancellation of preregistration for the following semester, denial of registration until the payment is made, and/or disenrollment. Appropriate University departments will provide the student with notice of the debt, reason for it, and a review, if requested. A student must fulfill all financial obligations to the University before receiving transcripts or a diploma.

## Student Financial Aid

Financial Aid is money made available from federal, state, local, or private sources which helps students attend the postsecondary institutions of their choice. At the University of Rhode Island these varied sources are administered by the Student Financial Aid Office in Roosevelt Hall. The financial aid program is designed to serve students from the widest possible range of society and all students are encouraged to apply.

In most cases financial aid will be awarded in a "package" of grants (which do not have to be repaid), loans (which have to be repaid), and student employment opportunities (part-time jobs while attending school). The purpose is to assist the students in meeting the costs of attendance at the University of Rhode Island. To continue receiving financial aid, it is necessary to re-apply and demonstrate sufficient financial need each year and maintain satisfactory academic progress.

Financial aid to students is awarded without regard to age, race, sex, creed, national origin, or handicap.

**Determination of Financial Aid.** A student does not have to be from a low-income family to qualify for financial aid, but does have to have "financial need." "Need" is the difference

between what it costs to attend the University and what the student and family can contribute from financial resources. The parents, insofar as they are able, are expected to bear primary responsibility for financing their son's or daughter's college education, and the student is also expected to earn a portion of the resources for college expenses, usually through summer employment.

**Eligibility.** Only citizens, nationals, or permanent residents of the United States are eligible to apply for financial aid. Foreign students desiring information about financial assistance should contact the Office of International Student Affairs at the University.

To be considered for financial aid, a person must have been accepted and enrolled as a matriculated student at the University. Enrolled students must be making satisfactory progress towards their degree according to the University's policy on satisfactory progress (see p. 23).

**Application Procedures.** Residents of Rhode Island, Massachusetts, New Jersey, or Pennsylvania should complete a Financial Aid Form (FAF) specifically printed for their state, listing the University of Rhode Island as a recipient of the analysis. Residents of other states should complete the national Financial Aid Form. The Undergraduate Student Financial Aid Application will subsequently be mailed to all students whose FAF results have been received by the University. Upperclassmen should pick up the Financial Aid Form at the Student Financial Aid Office. This application should be completed and returned as soon as possible with the documentation requested. Approximately 5-7 weeks after filing the FAF, the applicant will receive a Pell Grant Student Aid Report (SAR). The SAR should be submitted to the Student Financial Aid Office even if the student is ineligible for a Pell Grant.

**Application Dates.** The FAF should be mailed to the College Scholarship Service in Princeton, New Jersey, after January 1. Awards will be made to students who complete their application for aid on a first come, first served basis with highest-need candidates being given first consideration.



Applications will be processed as long as funds remain available.

### **Federal Aid Available**

**Pell Grants.** The Pell Grant is designed to form the foundation of all aid received. Each applicant is mailed a Student Aid Report (SAR) which must be forwarded to the Student Financial Aid Office. The amount of the Pell Grant will vary, and depends upon the costs of attendance and the number of credits for which the student enrolls.

**Supplemental Educational Opportunity Grant (SEOG).** The SEOG is intended to assist undergraduate students with financial need. SEOG awards are available in amounts ranging from \$200 to \$2,000 per year.

**National Direct Student Loan (NDSL).** Eligibility is based on need. Undergraduates are limited to borrowing \$3,000 for the first two years of their program with a maximum of \$6,000 for four years. Graduate students may borrow up to \$12,000 including undergraduate loans. These loans have a simple interest rate of 5% annually. Interest does not accrue until six months after graduation or withdrawal. Minimum payments of \$30 per month are required, and the repayment period may extend up to ten years.

**Nursing Student Loan Program.** The Nursing Student Loan is available to students enrolled in the College of Nursing. The long-term low-interest (6%) loans become due and payable nine months after graduation or termination of studies. The loans are designed to assist financially needy students achieve careers in nursing.

**Health Professions Loan Program.** This loan program is restricted to students in the College of Pharmacy. The long-term, low-interest loans of nine percent are available to all such students with financial need.

**College Work-Study Program (CWSP).** This federally supported program helps students procure part-time employment during the school term and full-time employment during the vacation periods. The jobs may be either with University departments, or with off-campus, non-profit, non-sectarian, non-political agencies. Other institutionally funded employment is also available. Jobs are posted at the

Student Financial Aid Office in Roosevelt Hall.

**Guaranteed Student Loan/Parent Loan Programs.** Students may apply for loans under the Guaranteed Student Loan Program through local lending institutions. Interest on loans, until six months after graduation or withdrawal, will be paid by the federal government. Simple interest of 8 percent annually for first-time borrowers is charged once the repayment period begins.

Undergraduate students may borrow up to \$2,500 per year with a maximum of \$12,500. The Student Financial Aid Office will determine the student's maximum eligibility based on the financial aid awarded up to that time. Students who have not applied for other forms of financial aid (by completing the FAF) are required to submit the GSL Needs Test so that the University can determine the financial need for the loan.

Parent loans are available through local lending institutions. The annual interest on these loans is 12 percent and repayment must begin within 60 days after the date of the check.

**Auxiliary Loans to Assist Students (ALAS).** In some states, independent undergraduates and parents of undergraduate dependent students may borrow loans with annual interest of 12 percent. Repayment must begin within 60 days after the loan is received. Additional information may be obtained from local lending institutions. As of May 1984, lending institutions in Rhode Island offer only the Parent Loan for Undergraduate Students (PLUS) component of this program.

### **University Aid Available**

**University Scholarships.** Scholarship awards require not only financial need, but evidence of high academic potential. Some scholarships have specific restrictions, such as place of residence, major, class year, etc. A list of available scholarships may be found in the Appendix.

**University Grants.** The University provides grants to several hundred students. To be awarded a University grant, the student must have a demonstrated financial need and a satisfactory academic record.

**Regular Student Employment (IPR).** Jobs funded by the University and not requiring a College Work Study award are available to several hundred students. Positions are posted in the Student Financial Aid Office.

**Athletic Awards.** Athletic awards are made upon the recommendation of the Athletics Department to athletes who meet the established qualifications. These awards, rather than being based on need, are based upon athletic ability. Students interested in such assistance should contact the Department of Athletics.

**University Loans.** Emergency loans of from \$10 to \$100 are available to full-time students. These loans are short-term in nature (14-90 days), and can be made only when the student is a full-time matriculated student and has a method of repayment. Application forms are available at the Student Financial Aid Office.

### **Other Sources of Aid**

**Rhode Island State Scholarships and Grants.** Undergraduate residents of Rhode Island who have been accepted for enrollment may be considered for Rhode Island State Scholarships or Grants. While both are based upon need, the scholarships also require a strong academic record in high school. The Rhode Island State Scholarship and Grant Program is administered by the Rhode Island Higher Education Assistance Authority, 274 Weybosset Street, Providence, Rhode Island.

There are many additional sources of financial aid available to students who qualify: scholarships from private organizations, clubs, labor unions, fraternities, sororities, and businesses; Vocational Rehabilitation financial support; Veterans Administration benefits, including survivor benefits; and Social Security benefits. Students should apply directly to the source if they believe they qualify.

A list of the scholarships and loans may be found on page 189. For veterans' benefits see page 19.

### **Policy on Satisfactory Progress**

To maintain satisfactory progress at the University of Rhode Island for federal financial aid purposes, the student must be enrolled in a degree-

granting program on at least a half-time basis (6 credits for undergraduates, 5 for graduates) for each semester that aid is received. Students enrolled full-time may receive aid for 10 semesters in completing what is normally a four-year program. Students completing what is normally a five-year program are permitted to receive aid for the equivalent aid, with an accumulation of 12 credits corresponding to a full-time semester. Two full-time (six credits) summer terms are considered the equivalent of one semester. The determination of a transfer student's eligibility includes the semesters of federal financial aid received prior to attendance at the University of Rhode Island.

Satisfactory progress standards will conform to the University's academic standards, as delineated in the *University Manual*. Students who are placed on academic probation will be notified of the possibility of their loss of federal financial aid eligibility. Students on academic probation for two consecutive semesters and students who are academically dismissed will be ineligible to receive federal financial aid. Criteria for probation and dismissal appear in the *University Manual*. A student who is declared ineligible to receive aid for not maintaining satisfactory academic progress may appeal the decision to the Satisfactory Progress Appeals Committee. Readmission to a program or removal from probation does not automatically constitute eligibility for federal financial aid.

Satisfactory progress will be monitored and measured at the end of each spring according to implementation procedures on file in the Student Financial Aid Office. Failure to maintain satisfactory progress for two consecutive semesters will result in the loss of federal financial aid eligibility until the student is determined by the Student Financial Aid Office to be once again making satisfactory academic progress.

If there are unusual circumstances which result in the student's inability to make satisfactory progress, the student should write a letter of appeal documenting the unusual circumstance(s) and submit the letter to the Satisfactory Progress Appeals Committee, c/o the Director of the Student Financial Aid Office.

## Student Life and Services

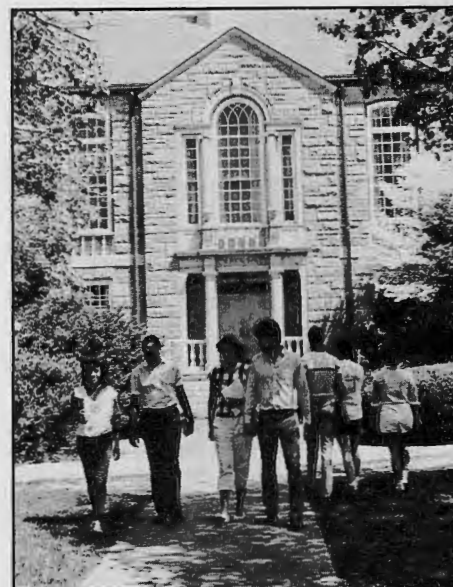
An enriching college life has a well-balanced mix of academic and extracurricular activities. The University offers a unique blend of student organizations and activities with emphasis on student-run services and businesses.

### New Student Orientation

Orientation programs which facilitate the students' entry into the campus community are administered by the Counseling Center. New students are taxed a nominal amount to cover such expenses as room, meals and materials associated with their orientation program.

**Summer Orientation Workshops.** All students who are beginning University careers attend a two-day workshop to plan their academic programs, to register for fall classes, to learn what to expect of the University, and to begin to acquire the skills essential to successful transition from high school and home to the University community. These programs are planned to personalize the student's first experience with the University as each one participates, with a group of approximately 15 classmates, in workshop projects. Admitted students receive workshop registration materials in May.

Special programs are planned for parents of new students to coincide with some of the workshop dates. Programs are also provided for older or non-traditional students and other students with special needs.



### Transfer Orientation Programs.

Students transferring to the University from another institution are encouraged to attend workshops planned especially to acquaint them with some of the unique features and procedures of this University. These workshops differ substantially from beginning student programs. They deal with the issues and problems associated with transferring from another educational institution to the University of Rhode Island. Orientation information and reservation materials are mailed separately to students admitted with advanced standing.

**Initial Orientation for International Students.** Programs just prior to the formal beginning of the academic year assist the international student to function effectively, comfortably, and with reasonable initial success in the new environment. Because successful transition to American culture, values, and institutions as well as to American academic life is crucial, new international students are required to attend the program. Full information regarding arrival dates and orientation program costs are mailed to students in the spring. In planning educational budgets, international students should set aside \$75 to cover cost of room, meals and program expenses. This expense is in addition to University fees specified in this bulletin.

**Commuter Student Orientation.** A one-day program is held just prior to the start of the fall semester. This special commuter orientation is presented by the Office of Student Life and is designed to address the problems, needs and concerns of new commuter students. Commuter orientation complements the summer orientation workshops and explores commuter-related issues and concerns in more detail.

## Life Styles

**Residence Halls and Dining Centers.** Residence halls and boarding facilities are available to students during both the regular academic year and the summer sessions. There are 19 residence halls on campus offering a variety of living accommodations including coeducational housing. Students registering for rooms in the residence halls will have their applications filled in order of receipt. Room assignments will be to the extent of facilities, and roommate requests will be granted when possible. Freshmen are guaranteed space in residence halls if they send in their housing deposit on time. For rates and contracts, see page 21.

Applications for residence hall living should be made to the Director of Residential Life.

Three dining centers are operated by the University for the convenience of resident students. These centers were constructed with private bond funds. To guarantee payment, the University requires all students living in residence halls to purchase a 15- or 20-meal dining contract as described on page 22.

**Fraternities and Sororities.** There are approximately 1,300 fraternity and sorority members living in the 23 nationally-affiliated houses privately owned by alumni corporations. The staff of the Office of Student Life advises these groups. The Greek houses promote scholarship, citizenship, and small-group living. Purchasing and business management for these houses is provided by a private corporation controlled by the fraternity and sorority members. The average room and board charge for fraternities and sororities is approximately \$400 less than for University residence halls and dining centers. Approximately 175 freshmen live in fraternities and sororities each

year. Interested freshmen should contact the Office of Student Life.

### Commuting from Family Home.

Approximately 2,000 students commute to the University from home. The advantages of home cooking, privacy, lower costs, and opportunity to keep high school friends are balanced against numerous challenges: acquiring information about all aspects of the University, returning to campus for evening events, transportation problems, and budgeting one's time. Various services are coordinated by the Office of Student Life to meet commuter needs. Dining Services offers special meal plans for commuters; Health Services provides a satellite clinic of preventive services; the Commuter Information and Referral Center, staffed by peer advisers, is a clearinghouse of information providing quick and accurate answers to any questions about University life. A car pool matching service is available in the Memorial Union Commuter Lounge.

### Commuting from "Down-the-line."

Approximately 2,000 students commute from houses or apartments in the southern Rhode Island area known as "down-the-line." Juniors and seniors often choose to move off campus and live within a ten-mile radius of the campus where summer homes are rented to students for the school year. Typically, a student will pay \$75-100 a month, plus utilities, for each bedroom in a furnished house. The majority of winter residents in these down-the-line summer communities are students and they patronize nearby supermarkets, laundromats, restaurants, shopping centers and recreational facilities. Many commute by car pool or bus. The Office of Student Life administers an off-campus housing service along with the commuter services mentioned above. Most services are located in the Commuter Lounge in the Memorial Union.

**Older Students.** Approximately 800 students (10% of the undergraduate population) on the Kingston campus are over 25 years of age. There is a student organization called Older Student Association (OSA) for these men and women who chose not to, or were unable to, attend college right after high school. Some are married, with family responsi-

bilities. Some also have jobs and are part-time students. Some older students are attending school with G.I. Bill benefits. Some have retired from a first career and want to prepare for a second. Older students are encouraged to seek advice from the Admissions Office staff. Programs and services for this group of students are coordinated by the Office of Student Life.

**Women Students.** Women students make up about half of the student population. A Women's Center, administered by the Office of Student Life, provides specific resources to help women grow to their full potential, and it coordinates lectures, programs, and activities of special interest to women. There are also on campus a Women's Crisis Center and a Women's Collective.

**Minority Students.** Approximately 300 students use the variety of services for minority students. Black students, native American students, Hispanic students, and other minority students have formed special interest groups to further meet their needs. Services are coordinated by the Office of Student Life.

**International Students.** More than 400 international undergraduate students, graduate students, and visiting faculty are advised and served by the Office of Student Life. Assistance is provided in the academic, social, financial and immigration areas. All communication from foreign students concerning non-immigrant visas and employment are handled by this office.

**Handicapped Students.** Approximately 200 students have identified themselves as disabled. A full range of services is offered by the University and conducted by the Office of Student Life. Handicapped students are encouraged to notify the Coordinator of Handicapped Services for individualized services and accommodations.

## Student Government

The Student Senate is a legislative body which represents the students to the administration and faculty and supervises extracurricular activities. It also distributes the activities tax among the various student organizations through its tax committee. Individual residence halls form their own govern-

ments. The Interfraternity Council supervises fraternity affairs and the Panhellenic Association governs sorority life. The Commuter Association provides social and other assistance to commuter students.

## University Judicial System

Administered by the Office of Student Life, the University Judicial System is designed to promote student growth and to preserve the atmosphere of learning necessary to the well-being of all students. Community standards of behavior and University policies for students are published in the student handbook, *Rampages*. The Judicial System receives complaints or allegations from aggrieved parties, the available facts are gathered and evaluated, and the case may be referred for formal judicial action by one of the University judicial boards or by administrative action (if the student admits guilt and chooses administrative action). Sanctions range from "no further action" to suspension or dismissal from the University and may include conditions relating to the nature of the violation.

## Student Activities

More than 120 student organizations are advised by the Student Activities Office staff through consultation services, technical expertise and information. Thousands of students participate in the activities sponsored by these organizations.

**Lectures and Arts Programs.** Lectures and arts programs are presented throughout the year to enrich the more formal academic program of the University. Lectures of general and specialized interest are presented by visiting scholars. The Arts Council, on which faculty, students, and administration are represented, plans programs that include music and dance concerts, film programs, and theatre presentations. Student organizations sponsor a popular entertainment series and bring speakers of national or international prominence to campus. These are supported by student funds.

**Student-run Businesses.** The Student Senate business arm, called Kingston Student Services, controls and operates a variety of student-oriented businesses

from a record and film shop in the Memorial Union and the campus youth hostel (primarily for commuters) to a used book exchange. Other student-controlled businesses include the fraternity and sorority cooperative buying service and the various residence hall cooperatives for purchase of food and sundry items, and management, with some full-time help, of the multi-thousand dollar food services in the Memorial Union.

**Athletics.** The University offers an extensive program of athletics, sufficiently varied to provide an opportunity for every student to participate. The Tootell Physical Education Center and the Keaney Gymnasium provide excellent facilities, including three pools, three gymnasiums, three weight training rooms, five handball courts, and a modern athletic training room. A multi-purpose indoor athletic complex is planned which will include facilities for track, tennis, basketball, jogging and many other indoor activities. The outdoor facilities include the newly renovated Meade football stadium, 21 tennis courts, two softball diamonds, a baseball field, a lighted lacrosse/soccer field, a new all-weather track, a hockey field, and numerous practice fields for recreation and competitive activities.

Men's intercollegiate teams participate in baseball, basketball, football, golf, soccer, swimming, tennis, cross country, and indoor and outdoor track.

In addition to membership in the Atlantic Ten Conference, the University holds membership in the Yankee Conference (football), the National Collegiate Athletic Association, the Eastern College Athletic Conference and the New England Intercollegiate Athletic Association. The women's intercollegiate teams participate in Division I basketball, field hockey, gymnastics, lacrosse, softball, volleyball, cross country, and indoor and outdoor track. They also participate in Division II swimming and diving, and tennis. URI holds membership in the Eastern Association of Intercollegiate Athletics for Women. The expansion of women's athletic programs provides opportunity for a high level of competition for exceptional female athletes on both the regional and national level.

Intramural programs for men and women combine the values of competitive athletics and informal sports, and are in operation all year.

Those with sports interests may join the several clubs identified with particular sports.

**Honor Societies.** The University has chapters of a number of national honor societies, election to which is a recognition of accomplishment. The Society of the Sigma Xi is the scientific honor society, Phi Beta Kappa is a national liberal arts honor society, Phi Eta Sigma is a national honor society for freshmen, Phi Kappa Phi is the honor society for general scholarship, and Mortar Board recognizes scholarship and leadership. In more specialized areas are the following: Alpha Kappa Delta (sociology), Alpha Zeta (agriculture), Beta Alpha Psi (accounting), Beta Gamma Sigma (business), Kappa Delta Pi (education), Delta Pi Epsilon (business education), Eta Kappa Nu (electrical engineering), Lambda Tau (medical technology), Omicron Delta Epsilon (economics), Omicron Nu (home economics), Phi Alpha Theta (history), Phi Sigma (biological science), Phi Sigma Iota (foreign languages, literature, and linguistics), Pi Delta Phi (French), Pi Mu Epsilon (mathematics), Pi Sigma Alpha (political science), Pi Tau Sigma (mechanical engineering), Psi Chi (psychology), Rho Chi (pharmacy), Sigma Delta Pi (Spanish), Sigma Pi Sigma (physics), Sigma Theta Tau (nursing), and Tau Beta Pi (engineering).

**Other Organizations.** In addition to intercollegiate athletic teams, a number of organizations represent the University in competition, exhibitions, and public performances. The University Band, Chorus, and Orchestra are under music department direction, and students may receive credit for participation in any one of these. The University Theatre, under theatre department direction, presents several plays each year. The URI Debate Council is directed by members of the speech department and participates in intercollegiate debates. The Cheerleaders are active at varsity football and basketball games and rallies.

On campus there are about 30 professional organizations related to the academic areas and there are a number of groups serving social, recreational, cultural, religious, and political interests.

Students publish a newspaper four times a week, a bi-weekly gazette, a yearbook, and a literary publication,



and operate WRIU, a local AM and a statewide FM radio station.

## Student Services

**Career Services.** The Office of Career Services assists students to understand themselves, to understand the relationship between their education and career choices, to discover and develop alternatives and finally, to make the transition from the academic environment to the working world. It provides individual counseling, developmental career groups and workshops. A Career Resource Center has information on specific careers, job-search strategy, job openings, employer literature and graduate schools. The office coordinates the on-campus recruiting program and makes other employer listings available to all students as well as alumni.

**Counseling Services.** The Counseling Center helps students relate their personal paths of development to the intellectual and interpersonal experiences they encounter in the University setting. The staff of this office works to keep education at a personal, individual level by offering assistance to students in choosing a field of study; developing effective study habits; coping with crises; building satisfying relationships with faculty, staff, and other students; making the transition to the University environment; solving emotional problems, or planning for graduate school or a career.

The staff is made up of counselors, psychologists, psychiatrists, and educational specialists who have a wide variety of experience working with students, both individually and in groups. In addition to direct counseling services, the staff offers a variety of programs designed to develop essential life skills, to examine crucial life themes, or to make successful life transitions.

**University Chaplains.** The University chaplains are active in providing religious services, in counseling, advising campus groups, teaching, and programming. The chaplains are available to all students, staff, and faculty on a 24-hour basis. The six chaplains represent the Roman Catholic, Jewish, Episcopal, and Protestant communities; referrals are available to representatives of other faiths.

**Memorial Union.** A student board of directors working with the Director of the Memorial Union determines policy for the Union and plans a full program of social, cultural, intellectual and recreational activities. The Union building is a memorial to the men of the University who died in two world wars. It houses a wide variety of educational, social, cultural and recreational services and facilities. These include meeting and conference rooms, lounges, browsing room, study rooms, dark rooms, student video center, radio station, campus newspapers, games room, offices for student organizations, student technical services, craft center, cafeteria, snack bar, restaurant, pub, private dining rooms, ballroom and party room.

Among the services provided are a bank, travel agency, unisex hair salon, credit union, and a center where copying facilities and typewriters are available.

**Health Services.** University health services are available to all students who have paid the health fee. These services include special clinics in gynecology, birth control, internal medicine, surgery, wart removal, allergy, nutrition, and mental health as well as generalist and nursing care, laboratory, X-ray, and pharmacy. Allergy injections are given, provided the vaccines are supplied.

Outpatient services during the academic year are available seven days a week, 24 hours a day. Physicians are available Monday through Friday from 8 a.m. to 8 p.m., and for a weekend clinic. Physicians are on call at other times. Nurses are on duty at all times. Specialists are available only at specified times.

Hospital care is available in the local community. All medical expenses incurred outside the University's Health Services are the responsibility of the student. Therefore, you are encouraged to have adequate insurance coverage (see Health Services brochure, *To Your Health*). Students who choose their own private physician must assume responsibility for expenses incurred.

The Health Education Department of Health Services in Roosevelt Hall is concerned with teaching students to take care of themselves and to become informed consumers of health care services. It is open Monday through Friday, 8 a.m. to 4 p.m.

## Confidentiality of Student Records

Procedures for the release and disclosure of student records maintained by the University are in large measure governed by state and federal laws. Where the law is silent, the University is guided by the principle that the privacy of an individual is of great importance and that as much information in a student's file as possible should be disclosed to the student upon request. A current or former student has the right to inspect and review official records, files and data directly related to that student. This right does not extend to applicants, those denied admission to the University or those who were admitted but did not enroll. Some records are not available to students.

Third parties do not have access to personally identifiable records or information pertaining to a student without the written consent of the student who specifies that the records be released. Parents are considered third parties.

Detailed guidelines for the release and disclosure of information from the student records are available from the Office of Student Life. These guidelines comply with the legal requirements of the Family Educational Rights and Privacy Act of 1974.



# University College

Diane W. Strommer, Dean  
 Everett T. Harris, Assistant Dean  
 Sarah H. Rockett, Academic Counselor

All entering students are enrolled in University College except registered nurses and students in special two-year programs. University College offers all other incoming students the opportunity to explore the variety of courses and programs available at the University before they commit themselves to one program of concentration in a degree-granting college. Students who have a clear educational or professional objective when they enter the University are encouraged to transfer to a degree-granting college as directly and rapidly as possible, usually by the end of their first year.

University College grants no degrees. Through its strong program of academic advising, its purpose is to assist new students in making a smooth transition to the University and to provide special assistance, programs, and events for freshmen and sophomores. Advisers, who have regular office hours at the college, are faculty members who represent each of the curriculums in the degree-granting colleges. Each student is assigned an academic adviser who is a specialist in the area which the student plans to pursue or who has a particular interest in working with students who have not yet declared a major. Advisers help students to select and schedule the right courses, become familiar with University procedures, and obtain whatever assistance may be needed.

If more students seek access to a program than can be accommodated



due to limited facilities or faculty, those students who have shown the highest promise for academic success in the program will be admitted first. Where such limitations exist, the student must apply for acceptance in the program under conditions established by the specific department or college. This applies specifically to programs which have been declared "over-subscribed"

by the Vice President for Academic Affairs. Students who cannot be admitted to the program of their first choice may request entry into another program for which they have satisfied entrance requirements, or spend one or two additional semesters in University College preparing to qualify for another program.



# College of Arts and Sciences

Richard J. Gelles, Dean  
Margaret D. Robb, Associate Dean  
J. Allan Cain, Acting Associate Dean  
Robert Gutchen, Acting Associate Dean  
Joyce P. Allen, Assistant Dean

The main objective of the College of Arts and Sciences is twofold: first, to enable all students to understand our intellectual heritage, the physical and biological world in which we live, and our social, economic, and political development; and second, to provide programs of professional education in selected fields as well as a strong foundation for graduate study.

The college has programs of study leading to the following degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music. The Department of Dental Hygiene provides programs leading to both the Bachelor of Science and the Associate in Science degrees.

For information on premedical, pre-dental, prelaw and preveterinary programs see pages 11-13.

## Curriculum Requirements

In order to obtain a degree in the College of Arts and Sciences, the student must meet requirements in three main areas: one, the general education program; two, the major; and three, electives. These three areas are described below.

**General Education.** The College of Arts and Sciences General Education requirements are called Basic Liberal Studies, and are required of all students. This series of courses is intended to insure that students have educational

experiences which will help them to become informed and responsible participants in society and contribute to the full development of their individual capabilities. The Basic Liberal Studies Program embodies the philosophy and fundamental knowledge which characterizes an arts and sciences education.

For Basic Liberal Studies, students select courses from the following categories:

Fine Arts and Literature (A)  
Letters (L)  
Natural Sciences (N)  
Social Sciences (S)  
Mathematics (M)  
English Communication (C)  
Foreign Language/Culture (F)

The courses approved by the College of Arts and Sciences are listed below. Students are limited to one course per discipline (as identified by course code) within the Fine Arts and Literature, Letters, Social Sciences and Natural Sciences divisions, except that they may take both parts of a designated course sequence. See page 30 for the list of approved sequences.

Students in Bachelor of Science (B.S.), Bachelor of Fine Arts (B.F.A.) and Bachelor of Music (B.M.) programs must earn six credits each in Letters, Natural Sciences, Social Sciences, and Fine Arts and Literature (three of which must be in Fine Arts and three in Literature), three credits in Mathematics, and six in English Communication, including at least three credits

from a course devoted to written communication skills. Students in these programs must satisfy the University's foreign language/culture requirement as specified on page 9.

Students in Bachelor of Arts (B.A.) programs must earn nine credits each in Letters, Natural Sciences, Social Sciences, and Fine Arts and Literature (at least three of which must be in Fine Arts and three of which must be in Literature),<sup>1</sup> three credits in Mathematics and six credits in English Communication, including at least three credits from a course devoted to written communication skills.

Students in B.A. programs must satisfy the University's foreign language/culture requirement in one of the following ways: (1) coursework through the intermediate level (104 for modern languages; 302 for classical languages), or (2) demonstration of competence through examination, or (3) study abroad in an approved academic program for one semester.

### Fine Arts and Literature (A)

Fine Arts: ART 101, 103, 120, 203, 207, 215, 231, 233, 251, 252, 263, 265, 280, 284, 285, 359, 374; HPR 101; MUS 101, 106, 111; SPE 231; THE 100, 181, 381, 382, 383.

<sup>1</sup>Students in the Comparative Literature Studies Program may fulfill the Fine Arts and Literature requirement by taking six credits in Fine Arts and three credits in Literature which are over and above their major requirement.



**Literature:** CLA 394, 395, 396; CLS 160, 250; ENG 160, 241, 242, 243, 245, 246, 251, 252, 263, 264, 265, 280; FRN 327, 328, 391, 392, 393; GER 325, 326, 391, 392; ITL 325, 326, 391, 392, 395; RUS 325, 326, 391, 392; SPA 303, 306, 391, 392.

#### Letters (L)

HIS 103, 105, 111, 112, 113, 114, 115, 116, 118, 122, 125, 132, 141, 142, 143, 145, 150, 171, 180, 304, 305, 306, 307, 309, 310, 311, 315, 321, 322, 323, 324, 325, 327, 332, 333, 340, 341, 342, 346, 353, 354, 381, 382, 383, 384; HPR 104; PHL 103, 104, 111, 117, 125, 126, 131, 227, 312, 314, 318, 319, 321, 322, 323, 324, 325, 328, 331, 346; PSC 341, 342; SPE 200, 205, 210.

#### Natural Sciences (N)

APG 201; AST 108; AVS 101; BIO 101, 102A; BOT 111, CHM 101, 102, 103, 105, 107, 112, 114, 124, 191, 192; FSN 207; GEL 100, 103, 104, 105, 106; HPR 103; PHY 111, 112, 120, 130, 140, 185, 186, 213, 214, 285, 286; ZOO 111, 286.

#### Social Sciences (S)

AAF 101, 102; APG 200, 202, 203, 319; CSC 220; ECN 125, 126, 300, 361; EDC 102, 312; ENG 232, 330; FSN 150; GMA 100, 102, 131; HCF 220; HPR 102; NRS 100; PSC 113, 116, 201, 221, 288; PSY 103, 113, 232, 235, 254; REN 105; SOC 100, 102, 204, 206, 210, 212, 214, 216, 224, 238, 241, 242, 316, 330, 336; SPE 220; WMS 200.

**Note:** The following have been approved as designated course sequences: **Social Sciences:** ECN 125, 126. **Natural Sciences:** CHM 101(102), 112(114); CHM 191, 192; PHY 213, 214.

#### Mathematics (M)

CSC 201; EST 220; MGS 101, 102; MTH 107, 108, 109, 111, 141, 142.

#### English Communication

**Writing (Cw)**—CMS 101; ENG 103; MGT 227; WRT 101, 102, 103, 112, 122, 123, 300, and 333. **General (C)**—CMS 101; PHL 101; SPE 101 and 103.

#### Culture Clusters

See list of approved foreign culture clusters in the General Education requirements on page 9. Students in the College of Arts and Sciences must select courses within a culture cluster from two different departments. Bachelor of Arts students may not use the culture cluster to fulfill their foreign

language/culture requirement.

Students may not apply courses from their major towards the Basic Liberal Studies requirements in fine arts and literature, letters, natural sciences and social sciences. However, if a student has a double major, he or she may apply courses from one major department toward these requirements.

**The Major.** Every student is required to specialize in a particular area or discipline; this area of specialization is called the major. The requirements for each major vary from field to field, and are described on pages 31-44. Any student who has met the requirements for two separate majors within either the Bachelor of Arts or the Bachelor of Science curriculum in the College of Arts and Sciences has earned a double major and may have both fields listed on the transcript.

A student must maintain a 2.0 quality point average (QPA) in his or her major to meet graduation requirements.

One-half of the total number of credits needed in a given major must be earned at the University of Rhode Island.

**Curricular Modifications.** In consultation with the adviser, and with the approval of the department and dean, a student may be permitted to modify the normal requirements of the department in which the student is majoring. Students may modify any curricular requirement except course level, minimum grade point average, total credits and the Basic Liberal Studies requirements. These may be modified only upon approval by the Scholastic Standing and Petitions Committee of the college. Petition forms are available in the Dean's Office.

**Electives.** Electives are courses not included in the General Education or major requirements which students may freely select in order to make up the total number of credits required for graduation. Many students use their elective credits to develop a minor field (see below).

**Minor.** Students may elect to declare a minor the title of which will be entered on their transcripts at graduation. Credits may be drawn from an approved combination of major, Basic Liberal Studies courses and electives. Requirements for a minor may be satisfied by 1) completion of eighteen or more credits offered

within a department and approval of the department chairperson, or 2) completion of 18 or more credits of related studies offered by more than one department and approval by a member of the faculty competent in the minor area of study and the dean of the college. Courses used in the minor may not be taken Pass-Fail.

It is the responsibility of the student to have his or her minor approved in timely fashion and to declare it to the Dean's Office no later than the beginning of the semester when graduation is expected.

**Course Load.** No student may take more than 18 credits per semester without permission from the adviser and the dean.

**Graduation.** It is the responsibility of the student to be familiar with University and college requirements and to submit a graduation worksheet, signed by his or her adviser, to the Dean's Office. Deadlines for submission are as follows:

May Graduation — November 1  
August Graduation — April 1  
December Graduation — August 1

## Bachelor of Arts

The Bachelor of Arts curriculums provide a general cultural background and an opportunity to major in any one of 31 fields of study.

**Curriculum Requirements.** Each candidate for a Bachelor of Arts degree must meet certain minimum curricular requirements in quantity and quality. These requirements include: at least 120 passed credits which include at least 42 credits in courses numbered 300 or above, and an overall quality point average of at least 2.0.

In addition to meeting the requirements of the Basic Liberal Studies Program, each candidate must complete a major and a number of elective courses. The major totals 27 to 30 credits.

**B.A. Major.** The major is the discipline or subject area in which the degree is granted. It may include not only required courses within the major department but also courses in related subjects. The student should declare this major before the end of the fourth semester.

The major comprises no fewer than 27 nor more than 30 credits. These, however, are exclusive of any credits which are outside the major department but may be required by that department as prerequisites. Including such prerequisites, the major may not exceed 36 credits.

The student may earn up to 45 credits in coursework offered by the major department, counting as electives those credits earned in excess of the major requirements. Any credits in excess of 45 earned in the major department increase correspondingly the minimum number of credits required for graduation.

*Majors include:* anthropology, art (history and studio), biology, chemistry, classical studies, comparative literature studies, economics, English, French, geography and marine affairs, geology, German, history, Italian, journalism, Latin American studies, linguistics, mathematics, music, philosophy, physics, political science, psychology, Russian, sociology, Spanish, speech, theatre, urban affairs (urban social processes, policy formation, and spatial development), and women's studies.

## Bachelor of Science

The Bachelor of Science curriculums are professionally oriented and, in general, meet the accreditation standards of national professional associations.

**Curriculum Requirements.** All candidates for the Bachelor of Science degree must fulfill the requirements of the Basic Liberal Studies Program and complete a major of 30-45<sup>2</sup> credits within a department. In addition, a department may require for its major certain courses in other departments, with the stipulation that this will not preclude their application to the Basic Liberal Studies Program requirements. No more than 130 credits can be required in a program.

Each major within the B.S. curriculum has certain more specific requirements, as listed on the following pages.

*Majors include:* botany, chemistry, computer science, dental hygiene, geology, mathematics, medical technology, microbiology, physics, zoology.

## Bachelor of Fine Arts

The curriculums provide the opportunity to discover and develop creative

capacities in the fine arts. The emphasis is on richness of program and quality of experience rather than the development of isolated skills. Applicants registering for work toward the Bachelor of Fine Arts degree must receive permission of their major department. Students majoring in theatre specializing in scene design must submit portfolios. Theatre students who wish to specialize in acting must arrange for an audition with the Department of Theatre. Others must arrange for an interview with a departmental representative. Further details and appointments may be obtained through the University Admissions Office.

**Curriculum Requirements.** All candidates for the Bachelor of Fine Arts degree are required to meet the requirements of the Basic Liberal Studies Program.

*Majors include:* art, theatre.

## Bachelor of Music

The Bachelor of Music degree is designed to prepare qualified students for careers in the field of music. Students may select one of the eight majors dependent upon their aims and abilities.

**Curriculum Requirements.** All candidates for the Bachelor of Music degree are required to meet the requirements of the Basic Liberal Studies Program.

Students are encouraged to attend department-sponsored events each semester.

*Majors include:* classical guitar, voice, piano or organ, orchestral instrument, music history and literature, theory and composition, jazz studies, music education.

All areas provide for a good background in academic subjects and each curriculum contains basic courses for the development of sound musicianship. An audition conducted by members of the music department staff is required for permission to register for work toward the Bachelor of Music degree.

The music education curriculum includes courses in educational psychology, methods, and a teaching internship which leads to state certification for teachers.

The total number of credits for graduation is 125 (126 for music education majors).

## Associate in Science

The Department of Dental Hygiene offers a two-year program leading to the Associate in Science degree. Students in this curriculum are not required to meet the Basic Liberal Studies Program requirements but must complete 71 credit hours in a prescribed program outlined in the department offerings.

## Anthropology

The Department of Sociology and Anthropology offers the degree of Bachelor of Arts (B.A.) in anthropology.

*Faculty:* Professor Carroll, chairperson. Professors Loy, Poggie, Pollnac and Turnbaugh; Assistant Professors Kelley and Lynch.

Students desiring to major in anthropology must complete a total of 30 credits in that subject. This total must include at least one course (3 crs.) from each of the five sub-disciplines of anthropology as follows: *Cultural Anthropology* includes APG 203, 309, 321, 322, 323, 324, 326, 405, 407, and 413; *Culture Areas* includes APG 305, 311, 313, 315, 319, and 325; *Physical Anthropology* includes APG 201, 300, 301, 390, 400, and 412; *Archaeology* includes APG 202, 303 and 317; *Anthropological Linguistics* includes APG 200 and 409.

In addition, each student majoring in anthropology must complete APG 401(3) and one of the following methodology courses: APG 300, 301, 302, 317 or 409. The remaining 9 credits may be selected from course offerings in anthropology.

It is recommended that the first course in each sub-discipline be at the 200 level. These 200-level courses are prerequisites for upper division courses in the sub-disciplines, although prerequisites may be waived by the instructor.

It is strongly recommended, but not required, that anthropology majors take at least one course in statistics.

A total of 120 credits is required for graduation.

<sup>2</sup>The student majoring in chemistry, for ACS accreditation purposes, will be allowed 48 credits.



## Art

The Department of Art offers a Bachelor of Arts (B.A.) degree with a concentration in either art history or art studio, and a Bachelor of Fine Arts (B.F.A.) degree in studio.

*Faculty:* Associate Professor Onorato, chairperson. Professors Calabro, Fraepkel, Kampen, Ketner, Klenk, Leete, Parker, and Rohm; Associate Professors Holmes, Richman, Roworth, and Keller; Assistant Professor Cordes.

### BACHELOR OF ARTS

**Art History.** It is recommended that students intending to major in art history plan to complete a minimum of 6 credits in the history of art by the end of the sophomore year. For graduation students must complete 30 credits (maximum 45 credits) in art history, including ART 251 and 252 (6), 354 (3), 356 (3), 359 (3), 363 (3) and 365 (3). An additional 3 credits are taken from any 200- or 300-level course in art history. An additional 6 credits must be selected from ART 461, 462, 469, 470, 480, 484. Studio courses in art are not to be considered part of the art history major and may be used as free electives.

It is recommended that students majoring in art history achieve intermediate level proficiency in at least one foreign language. Students anticipating graduate study in art history may need proficiency in a second foreign language. Students are also encouraged to enroll in courses in art studio, history, literature, music, and philosophy.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies Program and take 30-45 credits in art history. Students may use courses in art studio as electives. Of the 120 credits required for graduation, 42 credits must be numbered 300 or above.

**Art Studio.** It is recommended that students intending to major in art studio plan to complete a minimum of 9 credits in studio by the end of the sophomore year. For graduation, a minimum of 30 credits in art (maximum 45 credits) must be completed, including: studio courses ART 101, 103, 207, 403, and 404; art history courses ART 251, 252, and one art history elective.

An additional 6 credits must be selected

from 200 level studio courses (except 203 and 208), and an additional 6 credits must be selected from 300 and 400 level studio courses (except 309 and 310). Art history credits taken in addition to the 9 required are not to be considered as part of the art studio major and may be taken as free electives.

It is recommended that art majors elect at least 3 credits in the allied fields of music or theatre.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies Program and take 21-36 credits in art studio and 9 credits in art history. Students may use additional courses in art history as electives. Of the 120 credits required for graduation, 42 credits must be numbered 300 or above.

### BACHELOR OF FINE ARTS

It is recommended that students intending to enter the B.F.A. program in art plan to complete ART 120 in the freshman year and to have completed an additional 3 credits in art history and a minimum of 24 credits in studio by the end of the sophomore year.

Students in the B.F.A. program must complete a minimum of 72 credits in art. Studio courses required of all majors include: ART 101 (3), 103 (3), 207 (3), 208 (3), either 213 or 215 (3), 405 (3), and 406 (3).

An additional 12 credits must be selected from 200 level studio courses, and an additional 21 credits must be selected from 300 level studio courses.

ART 120 is required of all students and an additional 9 credits must be selected in art history, 3 credits of which must be numbered 300 or above.

An additional 6 credits of art electives must be selected at the 300 level or above in either studio or art history.

A minimum of 120 credits is required for graduation, including the following: major requirements in studio (54), art history (12), studio and/or art history electives (6). Students must meet the requirements of the Basic Liberal Studies Program.

## Biological Sciences

Programs in biological sciences are administered by the Departments of Botany, Microbiology, and Zoology. A student may earn either the Bachelor of

Arts (B.A.) degree in biology or the Bachelor of Science (B.S.) degree in botany, microbiology, or zoology. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees, also offered by these departments, are described in the *Graduate School Bulletin*.

*Botany Faculty:* Professor Goos, chairperson. Professors Albert, Beckman, Harlin, Hauke, Smayda and Swift; Associate Professors Hargraves, Killingbeck, Koske, Mottinger and Sheath; Adjunct Professor Dougall; Emeritus Professors Caroselli, Lepper, and Palmatier.

*Microbiology Faculty:* Professor N.P. Wood, chairperson. Professors Cabelli, P.S. Cohen, H.W. Fisher, Laux, Sieburth and Traxler; Associate Professors Hufnagel, and Sperry; Assistant Professor Nelson; Adjunct Professor Ennis; Adjunct Associate Professor Prager; Emeritus Professor Carpenter.

*Zoology Faculty:* Professor Wilde, chairperson. Professors Cobb (on leave 1984-85), Costantino, Goertemiller, Hammen, Heppner, Hill, K.E. Hyland, Salla, Shoop (on leave spring 1985), and Winn; Associate Professors Bibb, Bullock, Goldsmith, Hairston (on leave 1984-85), Kass, Krueger, and Mottinger; Assistant Professor Levings; Adjunct Professors Bliss, Farish, Gibbs, Lions, Miller, Tilly, and Treistman; Emeritus Professors DeWolf, Harrison, and Zinn; Emeritus Associate Professor Mathewson.

### BACHELOR OF ARTS

Students selecting a major in biology must complete a minimum of 28 credits in biological sciences including the following basic courses: BIO 101 and 102 or BOT 111 and ZOO 111 (6-8), MIC 211 (4), plus BOT electives (6), and ZOO electives (6).

The remaining 4-6 credits may be selected from courses in botany, microbiology, or zoology. Students in this major must elect a year of chemistry. Those wishing to prepare for a career as a professional botanist, microbiologist, or zoologist should enroll in a bachelor of science curriculum described below.

Students must declare their major when leaving University College.

## BACHELOR OF SCIENCE

This curriculum provides specialization in the fundamental principles of botany, microbiology, or zoology, and is concerned with the application of biological science to problems of modern life. It also provides preparation for graduate work in biological fields including aquatic, environmental and marine biology, molecular, cellular and developmental biology, biological oceanography, genetics, immunology, and limnology, and for admission to professional schools of medicine, dentistry, and veterinary medicine.

Students who know their professional goals are encouraged to declare their major as soon as possible in order to take advantage of skilled advising in botany, microbiology, or zoology. Students must declare their major when leaving University College.

Each concentration requires a total of 130 credits.

### Freshman Year

First semester: 17 credits

BOT 111 or ZOO 111 (4), CHM 101, 102 or 103, 105 (4), MTH 109 or 141 (3), modern language or elective (3), and general education requirement or free elective (3).

### Freshman Year

Second semester: 17 credits

BOT 111 or ZOO 111 (4), CHM 112, 114 (4), MTH 141 or 142<sup>3</sup> (3), modern language or elective (3), and general education requirement or free elective (3).

### Sophomore Year

First semester: 16 credits

MIC 211 (4)<sup>4</sup>, CHM 227 (3), and 9 credits of general education requirements or free electives<sup>5</sup> for a total of 17 credits.

### Sophomore Year

Second semester: 17-18 credits

Curriculum requirement (3-4), general education requirements or free electives (9), and the remaining chemistry requirements CHM 226<sup>6</sup>, 228 (5).

**Botany.** A minimum of 30 credits in botany is required and must include BOT 111, 221, 245, 262. The remaining 17 credits will be selected to complete a particular subdisciplinary path. In addition, the student must take MIC 211; CHM 101, 102, or 103, 105, 112, 114, 226<sup>6</sup>,

227, 228 or 124, 126 and BCP 311; PHY 213, 285, 214, 286 or 111 and 112; ZOO 111; WRT 101; SPE 101 or 102; MTH 141; CSC 201 or MTH 142; a modern language is recommended.

Students are strongly urged to consult faculty advisers to obtain guidance on the various sub-disciplinary paths available.

**Microbiology.** A minimum of 30 credits in microbiology is required, including MIC 411 and 495 or 496. The student majoring in microbiology may include any course in microbiology; ASP 534, 536, and 538; BOT 355, 432, 534, 542; PCG 536; ZOO 323, 331, 441 and 512. A student who plans to attend graduate school is advised to take MTH 141 and 142, and BCP 435. In addition the student must take BOT 111 and 352; ZOO 111; CHM 101, 102, or 103, 105, 112, 114, 226<sup>6</sup>, 227, 228, and 212; BCP 311; PHY 213, 285, 214, and 286 or 111, 185, 112, and 186; MTH 109 or 141 and 141 or 142; and one semester of a modern language at the intermediate level.

**Zoology.** A minimum of 30 credits in zoology is required and must include ZOO 221, 254, 262, 316, 341 or 345 and 395; ASP or BOT 352. In addition, the student must take BOT 111; CHM 101, 102 or 103, 105; CHM 112, 114, 226<sup>6</sup>, 227, 228; MTH 141, 142; PHY 111, 185, 112 and 186 or PHY 213, 285, 214, 286; and a modern language through the intermediate level. ZOO 111 is not required for a major in zoology but may be applied toward the 30 hours required.

Students are strongly urged to consult the zoology advisers and obtain from them detailed programs of the various sub-disciplinary paths through the department.

## Chemistry

The Department of Chemistry offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in chemistry are described in the *Graduate School Bulletin*.

**Faculty:** Professor Fasching, chairperson. Professors Abell, C.W. Brown, P.R. Brown, Cheer, Gonzalez, Goodman, Kirschenbaum, W. H. Nelson, Petersen, Rosen, Rosie, and Vittimberga; Associate Professors Forcé and Freeman;

Assistant Professors Durand, Euler, and Yang.

## BACHELOR OF ARTS

Students selecting this field must complete 28-30 credits in chemistry by taking either 12 credits as CHM 101 and 102, 112 and 114, 212; or 10 credits as CHM 191 and 192; and 18 credits as CHM 227 and 228, and 226, 431, and 432, 335 and 336. CHM 229, 230, which is offered in summer only, may be substituted for CHM 226. CHM 291, 292 may be substituted for the CHM 226, 227, 228 sequence.

MTH 141 and 142, one year of physics (PHY 111, 185, 112 and 186 or PHY 213, 214, 285, and 286) are required and one semester of English composition (WRT 101 or 102) is strongly recommended.

A total of 120 credits is required for graduation.

## BACHELOR OF SCIENCE

Designed to prepare the student for a career in chemistry, this curriculum provides a thorough training in both theories and practices in the fields of analytical, physical, organic and inorganic chemistry. Those who complete this curriculum are prepared to continue with graduate study leading to an advanced degree, to teach or to enter specialized fields in development, control, technical sales, and research either in the chemical industry or in industries involving chemical processes.

The curriculum has been approved by the American Chemical Society Committee on the Professional Training of Chemists. Graduates receive a certification card issued by the society and are eligible for senior membership after two years of experience in the field of chemistry. It is strongly recommended that WRT 101 or 102 be taken in the freshman year. CHM 412, 414 should be taken in the junior year by students planning research or advanced coursework in analytical chemistry. CHM 425, 427 should be taken in the junior year

<sup>3</sup>MTH 142 is required of zoology and is an optional requirement for botany majors.

<sup>4</sup>Not required of zoology majors.

<sup>5</sup>Botany and zoology majors are strongly advised to begin taking required major courses at this time.

<sup>6</sup>CHM 229, 230, which is offered in summer only, may be substituted for CHM 226.

by students planning research or advanced coursework in organic chemistry.

The bachelor of science program requires 130 credits.

#### Freshman Year

First semester: 17 credits

CHM 191 (5)<sup>7</sup>, MTH 141 (3), language<sup>8</sup> or free elective (3), general education electives (6).

#### Freshman Year

Second semester: 17 credits

CHM 192 (5)<sup>7</sup>, MTH 142 (3), language<sup>8</sup> or free elective (3), general education electives (6).

#### Sophomore Year<sup>9</sup>

First semester: 17 credits

CHM 291 (4), MTH 243 (3), PHY 213 (3) and 285 (1), language<sup>8</sup> or general education elective (3), general education elective (3).

#### Sophomore Year

Second semester: 17 credits

CHM 292 (4), MTH 244 (3), PHY 214 (3) and 286 (1), language<sup>8</sup> or general education elective (3), general education elective (3).

#### Junior Year

First semester: 14 credits

CHM 431 (3), 335 (2), physics elective (3), general education elective (3), free elective (3).

#### Junior Year

Second semester: 17 credits

CHM 432 (3), 336 (2), general education electives (6), free electives (6).

#### Senior Year

First semester: 16 credits

CHM 401 (3), 425 (2), 427 (3), curriculum<sup>10</sup> requirements (3-5), free electives (5-3).

#### Senior Year

Second semester: 15 credits

CHM 392 (1), 412 (3), 414 (2), curriculum<sup>10</sup> requirement (3-0), free electives (6-9).

<sup>7</sup>Students can take CHM 101(2), CHM 112(4), and 212 instead of 191-192.

<sup>8</sup>Students planning to attend graduate school should take Russian or German through the intermediate level.

<sup>9</sup>This sample program can easily be adapted for transfer students and premed, prevet programs.

<sup>10</sup>CHM 353, 354 or, with permission of department, any 500-level chemistry course.

## Classical Studies

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in classical studies.

Faculty: Associate Professor Cashdollar, chairperson (Department of Languages) and section head.

Students selecting classical studies as a major complete a minimum of 30 credits; (a) 18 credits from either LAT 301, 302, 497, 498, or GRK 301, 302, 497, 498; (b) 6 credits from the other language at any level; (c) 6 additional credits from any courses offered by the Classics Section. Either LAT 101, 102 or GRK 101, 102 sequence may count toward the major; the other 100-level sequence, not counting toward the major, will serve as a prerequisite for advanced courses.

A total of 120 credits is required for graduation.

## Comparative Literature Studies

The Department of English and the Department of Languages offer jointly the Bachelor of Arts (B.A.) degree in comparative literature. The Master of Arts (M.A.) degree is described in the *Graduate School Bulletin*.

Coordinator: Associate Professor Kuhn (Languages)

The choice of courses in a student's major and in the area of special interest must have both sufficient range (genre, period, and at least two literatures) and a specific focus. It must be approved by an adviser and the Comparative Literature Advisory Committee consisting of members from the Departments of English and Languages.

A total of 120 credits is required for graduation.

Students in the Comparative Literature Studies fulfill the Fine Arts and Literature requirement by taking 6 credits in Fine Arts and 3 credits in Literature which are over and above their major requirement.

Students must complete a minimum of 30 credits in one of the three major options:

**English and one foreign literature in the original language.** 9 credits in English and/or American literature, 300 level or above; 9 credits in one foreign literature; 3 credits in literary theory or

criticism (CLS 350). The remaining credits to be taken from the comparative literature core courses or the literature courses in the Departments of English or Languages.

**Two foreign literatures in the original language.** 9 credits in each of two foreign literatures; 3 credits in literary theory or criticism (CLS 350). The remaining courses to be taken from the comparative literature core courses or the literature courses in the Departments of English or Languages.

**World literature in English translation.** 3 credits in the nature of language from APG 200, 409; LIN 201, 202; or PHL 440; 3 credits in literary theory or criticism (CLS 350). The remaining credits to be taken from the comparative literature core courses and the literature courses in the Department of English, and the literature in English translation courses offered by the Departments of English and Languages. In addition, a student choosing this option must have proficiency in a foreign language through the intermediate level.

A total of 120 credits is required for graduation.

## Computer Science and Experimental Statistics

The Department of Computer Science and Experimental Statistics offers the Bachelor of Science (B.S.) degree in computer science. The Master of Science (M.S.) degree programs in computer science or statistics and the Doctor of Philosophy (Ph.D.) in applied mathematical sciences with specialization in computer science or statistics are described in the *Graduate School Bulletin*.

Faculty: Associate Professor Lamagna, chairperson. Professors Carney, Merenda and L.T. Smith; Associate Professors Bass, Carrano, Hanumara, Heltshe, Lawing, Marshall, Soh, and Weideman; Adjunct Professors Arnold and Vicchione; Emeritus Professor Hemmerle.

The curriculum is designed to provide a broad introduction to computer science fundamentals. Emphasis is on computer software and applications.

The required mathematics preparation provides a basis for advanced work. Students will be well prepared for graduate study in computer science or computer-related areas.

Demand for computer science has far exceeded the department's resources. Therefore, the number of students majoring in computer science enrolled in the College of Arts and Sciences will be limited to 35 per year. University College students and students in other curriculums will be considered for admission to the College of Arts and Sciences as computer science majors each January. Selection will be based primarily upon grade point average.

A registration priority is in effect for all computer science courses. Preference is given to computer science majors, followed by students whose curriculum requires computer science, followed by all others. Students who have preregistered for computer science courses will be given preference, within the above constraints, regardless of their curriculum. Therefore, preregistration is strongly recommended.

Students in this curriculum must complete a minimum of 39 credits in the major as follows:

CSC 201 (3), 202 (3), 240 (3), 301 (3), 311 (3), 413 (3); also 21 additional credits chosen from EST 409, ELE 405 and any CSC course at the 300 level or above (excluding special topics and directed study).

In addition, 12 credits of professional electives are required. The courses must be selected from a list which is available from the department.

Also required are MTH 141 (3), 142 (3), 215 (3), 243 (3); one SPE course (3) and one WRT course (3) or CMS 101 (6).

A total of 130 credits is required for graduation. A possible course of studies follows:

#### *First Year*

*First semester: 15 credits*

MTH 141 (3), WRT 101 (3), general education or electives (9).

#### *First Year*

*Second semester: 15 credits*

CSC 201 (3), MTH 142 (3), SPE 101 (3), general education or electives (6).

#### *Second Year*

*First semester: 15 credits*

CSC 202 (3), MTH 243 (3), general education or electives (9).

#### *Second Year*

*Second semester: 15 credits*

CSC 240 (3), 301 (3), MTH 215 (3), general education or electives (6).

#### *Third Year*

*First semester: 18 credits*

CSC 311 (3), major (6) (e.g. CSC 302, EST 409), professional electives (3), general education or electives (6).

#### *Third Year*

*Second semester: 17 credits*

Major (6) (e.g. CSC 350, CSC 406, CSC 411), professional electives (3), general education or electives (8).

#### *Fourth Year*

*First semester: 18 credits*

CSC 413 (3), major (3) (e.g. CSC 416), professional electives (3), general education or electives (9).

#### *Fourth Year*

*Second semester: 17 credits*

Major (6) (e.g. CSC 412, ELE 405), professional electives (3), general education or electives (8).

## **Dental Hygiene**

The Department of Dental Hygiene offers a four-year program leading to the Bachelor of Science (B.S.) degree and a two-year program leading to the Associate in Science (A.S.) degree. Both are accredited by the Commission on Dental Accreditation.

*Faculty:* Professor B. Wilson, chairperson. Assistant Professors B. Brown and S. Saunders; Adjunct Professors A. Carlotti, Jr. and J. Yacovone; Clinical Instructors S. Bauder, F. Bliss, J. Carroccia, J. Feldman, D. Gallagher, R. George, H. Howarth, A.J. Kershaw, B. Kilcline, J. Mullane, D. Persechino, S. Ross, J. Schwab, and J. Tompkins.

## **BACHELOR OF SCIENCE**

This curriculum offers maximum flexibility in providing professionally oriented study and a foundation in General Education. It is designed to prepare the students to assume responsible positions in education, such as in schools of dental hygiene, hospital programs, and school systems as well as private practice. Students who complete this curriculum are prepared to continue with graduate study.

Upon completion of the required 71 credits in dental hygiene, the student is awarded the Associate in Science degree. A total of 125 credits is required for the Bachelor of Science degree. At the completion of the first clinical year, students are placed in private dental offices for one month of field training experience.

The required professional courses are made up of the elements which contribute directly to the skill and understanding of dental hygiene and are required in the professional sequence.

A major of 30 credits in dental hygiene includes: DHY 101 (1), 125 (3), 135 (1), 141 (1), 126 (3), 128 (1), 136 (2), 227 (3), 231 (2), 237 (2), 238 (2), 244 (1), 248 (2), 250 (2), 252 (2), 260 (2).

In addition, candidates for the Bachelor of Science degree are required to take the following: CHM 101, 102 or 103, 105 (4), 124 (3), 126 (1), WRT 101 (3), 102 (3), ZOO 121 (4), 242 (3), 244 (1), HLT 172 (1), MIC 201 (4), SOC 100 (3), 204 (3), FSN 207 (3), PCL 221 (2), PSY 113 (3), 232 (3), SPE 101 (3), EDC 102 (3), 312 (3), 372 (3), MTH 107 (3); DHY 462 (3) and DHY 464 (3) are strongly recommended.

## **ASSOCIATE IN SCIENCE**

This two-year curriculum of 71 credits prepares the student to perform ancillary clinical services which contribute to the maintenance of good oral health, educate both children and adults in oral hygiene, and assist the dentist to allow him more time for the treatment of patients.

The program is designed to allow transfer students from other colleges and curriculums to attain the Associate in Science degree. Two months of experience as a dental assistant is recommended for all students entering the dental hygiene program. At the completion of the first clinical year, the student is placed in a private dental office for one month of field training experience.

#### *Freshman Year*

*First semester: 17 credits*

CHM 101, 102 or 103, 105 (4), WRT 101 (3), ZOO 121 (4), DHY 101 (1), 125 (3), 135 (1), and 141 (1).



**Freshman Year**

Second semester: 18 credits

WRT 102 (3), CHM 124 (3), 126 (1),  
ZOO 242 (3), 244 (1), HLT 172 (1), DHY  
126 (3), 128 (1), and 136 (2).

**Sophomore Year**

First semester: 19 credits

MIC 201 (4), SOC 100 (3), FSN 207 (3),  
PCL 221 (2), DHY 227 (3), 231 (2), and  
237 (2).

**Sophomore Year**

Second semester: 17 credits

PSY 113 (3), SPE 101 (3), DHY 238 (2),  
244 (1), 248 (2), 250 (2), 252 (2), and  
260 (2).

**Economics**

The Department of Economics offers a Bachelor of Arts (B.A.) degree and a Master of Arts (M.A.) in economics. Students who want to design a special program combining economics with an applied area of interest or participate in the department's accelerated program are encouraged to consult the chairperson of the department.

**Faculty:** Associate Professor Starkey, chairperson. Professors Hellman and Rayack; Associate Professors Barnett, Mead, Ramsay, and Suzawa; Assistant Professors Burkett, Fanchon, Lardaro, Latos, and Ramstad.

Students selecting this field must complete a minimum of 30 credits in economics, including ECN 125 and 126 (6), 361 (3), 327, 328 (6), and at least one quantitative course [374 (3), 375 (3), 376 (3)].

In addition, at least 15 credits must be completed from economics courses numbered 300 or above. Students may substitute up to six credits from other departments; three credits from statistics [MGS 201 (3), 202 (3), EST 408 (3), 409 (3), or 412 (3)] and three credits from another related course approved by the department chairman.

Students planning to do graduate work in economics are encouraged to take ECN 375, 376 and at least one semester of statistics.

A total of 120 credits is required for graduation.

**English**

The Department of English offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) programs in English are described in the *Graduate School Bulletin*.

The Department of English offers jointly with the Languages Department the Bachelor of Arts degree in comparative literature studies (see p. 34).

**Faculty:** Associate Professor Reaves, chairperson. Professors Goldman, Gullason, Kunz, MacLaine, J. M. Marshall, Mathews, Miller, Neuse, Pearlman, Petrie, Potter, Seigel, Sorlien, Stineback, Towers and S. White; Associate Professors Arakelian, Barker, Campbell, Cane, Cuddy, Donnelly, Dvorak, M. Hills, Jacobs, Leo, Malina, Martin, McCabe, C.M. Murphy, Schoonover, Schwegler, K. Stein, Swan, R.H. Tutt and R.M. Tutt; Assistant Professors Badejo, Burke, Mensel, Shamoon, and Vaughn; Adjunct Professor Strommer.

Students selecting this field must complete a minimum of 30 credits in English, including ENG 251 and 252.

The other remaining credits will be determined by the student in continuing consultation with the departmental advisers.

A total of 120 credits is required for graduation.

**French**

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in French. The Master of Arts (M.A.) program in French is described in the *Graduate School Bulletin*.

**Faculty:** Associate Professor Cashdollar, chairperson (Department of Languages); Associate Professor Chartier, section head. Professors Porter, Rogers, Rothschild and Waters; Associate Professors Hyland, Kuhn, Morello, and Toloudis; Assistant Professor Driver.

Students selecting this field are required to complete at least 30 credits in French not including FRN 101, 102, 131, 391, 392, 393, or 394. They may elect either a language-civilization option requiring 6 credits in civilization

and a minimum of 6 credits in literature or a language-literature option with a minimum of 9 credits in literature. Courses in literature may be selected from among FRN 325, 326, courses at the 400 level, and, with permission of the instructor, courses at the 500 level.

Additionally, students of proven competence in French language and literature, with permission of the adviser, the section head, the department chairperson and the dean of the college, may take courses in related fields such as history, linguistics, art, or philosophy toward their concentration.

Students in secondary education with an academic sequence in French (see page 65) cannot count FRN 101, 102, 131, 391, 392, 393, 394, or any course in linguistics other than 201 which may be taken if approved by the French Studies Section.

A total of 120 credits is required for graduation.

**Geography and Marine Affairs**

The Department of Geography and Marine Affairs offers the Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) program in geography, the Master of Marine Affairs (M.M.A.), and Master of Arts in Marine Affairs (M.A.M.A.) programs are described in the *Graduate School Bulletin*.

**Faculty:** Professor Juda, chairperson. Professors Alexander and Michel; Associate Professor West; Assistant Professors Burroughs, Krausse, Marti, and Nixon.

Students selecting this field are required to complete at least 30 credits in accordance with the following distribution: two of the following courses (6 credits) GMA 100, 102, 103, 131; all of the following (18 credits) GMA 210, 410, 421, 461, 482 and OCG 401; and two of the following (6 credits) GMA 312, 413, 422, 432, 471, 472, 491.

A total of 120 credits is required for graduation.

## Geology

The Department of Geology offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree in geology is described in the *Graduate School Bulletin*.

*Faculty:* Professor Hermes, acting chairperson. Professors Cain, and J.J. Fisher; Associate Professors Boothroyd, Frohlich and Tynan; Assistant Professor Murray.

### BACHELOR OF ARTS

Students selecting this field must complete a minimum of 30 credits in geology, including GEL 103 (3), 106 (1) and 104 (3). GEL 105 (ESC 105) normally may not be included.

The B.A. curriculum provides more flexibility than the B.S. program in the choice of courses and offers the possibility of highly individualized programs in consultation with the faculty adviser. The B.A. curriculum can provide an appropriate background for geology-related fields dealing with resources, environmental studies, conservation management, and others. Students intending to pursue graduate studies in the geosciences should consider the B.S. curriculum in geology or complement the B.A. program with a broad background in basic sciences. The federal government identifies GEL 320, 321, 370, 410, 440, 450, and supporting sciences as a minimum background for geologists.

Students interested in earth science teaching should contact the Department of Geology for details of a cooperative program with the Department of Education.

A total of 120 credits is required in the B.A. program.

### BACHELOR OF SCIENCE

This curriculum is designed as a basic foundation for careers in the earth sciences. It offers preparation for further work in areas such as sedimentology, coastal geology, petrology, geochemistry, structural geology, tectonics, geophysics, paleontology, paleoecology, mineral and energy resources, engineering geology, environmental geology, and oceanography.

An emphasis on marine geology is possible by taking, in addition to marine-oriented geology courses, approved geology-related courses offered by the Graduate School of Oceanography and the Department of Ocean Engineering as science electives. Information about this and other similar options can be obtained from the chairperson of the department.

Students majoring in geology should note the requirement for field experience. An approved summer field camp for a minimum of 4 credits normally is undertaken following the junior year, and related costs are the responsibility of the student. Minimum background for field camp normally includes GEL 320, 321, 370 and 450. (Field camp is not required under the B.A. curriculum.)

A total of 126 credits is required for graduation. Following is the suggested sequence of courses for the first four semesters. Completion of these courses fulfills the Natural Sciences and Mathematics Division requirements and satisfies prerequisites for upper-division geology courses. Late concentrators, transfer students and others wishing to modify this schedule should consult their geology faculty adviser.

#### Freshman Year

First semester: 16-17 credits

MTH 141 (3), GEL 103 (3), 106 (1), BOT 111 or BIO 101 (4-3), and general education requirements (6).

#### Freshman Year

Second semester: 15-16 credits

MTH 142 (3), GEL 104 (3), ZOO 111 or BIO 102 (4-3), and general education requirements (6).

#### Sophomore Year

First semester: 16 credits

CHM 101, 102 or 103, 105 (4), PHY 213, 285, or 111, 185 (4), GEL 320 (4), and general education requirement or elective (4).

#### Sophomore Year

Second semester: 16 credits

CHM 112, 114 (4), PHY 214, 286 or 112, 186 (4), GEL 321 (4), and GEL 370 (4).

#### Junior and Senior Years

In addition to the remainder of the general education requirements and free electives, CSC 201 and the following 4-credit courses are required: GEL 410,

440, 450; approved summer camp (between junior and senior years).

Students must also take 12 credits of science electives (including additional geology courses) which constitute an integrated group in earth science. These are selected in consultation with the faculty adviser.

## German

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a major in German.

*Faculty:* Associate Professor Cashdollar, chairperson (Department of Languages); Professor Dornberg, section head. Associate Professor Grandin.

Students selecting this major complete at least 30 credits in German (27 credits for major in secondary education) not including GER 101, 102, 391, 392, or 393. At least 6 credits must be at the 400 level in literature.

## History

The Department of History offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) program in history is described in the *Graduate School Bulletin*.

*Faculty:* Professors Briggs, Cohen, Findlay, Kim, Klein, Strom, Thurston, and Weisbord; Associate Professors Costigliola, and Roughton; Assistant Professors Brown, Daniel, Honhart, Murphy, and Silvestri; Visiting Assistant Professor Besse; Adjunct Associate Professor Klyberg.

Students selecting this field must complete a minimum of 30 credits in history, including a minimum of 6 and a maximum of 12 credits in courses numbered 100 to 299.

The balance of required credits is in courses numbered 300 or above, including one undergraduate seminar, HIS 395. Under unusual circumstances, with permission of the chairperson of the department, a student may substitute, in place of the seminar, HIS 391 leading to a substantial research paper.

Undergraduates wishing to take courses on the 500 level must secure the permission of the department.

A total of 120 credits is required for graduation.

## Italian

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a concentration in Italian.

*Faculty:* Associate Professor Cashdollar, chairperson (Department of Languages); Professor Trivelli, section head. Associate Professor Viglionese.

Students selecting this field complete at least 30 credits in Italian (27 credits for major in secondary education) not including ITL 101, 102, 391, 392, 393, or 395. ITL 325, 326 are required for the major.

A total of 120 credits is required for graduation.

## Journalism

The Department of Journalism offers the Bachelor of Arts (B.A.) degree.

*Faculty:* Professor Lichtenstein, chairperson. Associate Professors Batroukha (on leave) and Thompson; Assistant Professors Levin, Rader, and Snodgrass.

Students selecting this major must complete a minimum of 30 credits in the print or broadcast journalism sequence, or both, including JOR 110 (3), 212 (3), 434 (3), 438 (3).

Those following the print sequence must complete JOR 325 (3) and either JOR 324 (3) or 326 (3).

Those following the broadcast sequence must complete JOR 271 (3) and 372 (3).

Students may elect to complete the print as well as the broadcast sequence.

Additionally, all students must complete at least 12 more credits in courses offered by the Journalism Department, not more than 6 of which may be in internships. All journalism students are required to type and to pass a writing skills test.

A total of 120 credits is required for graduation.

## Languages

The Department of Languages offers the Bachelor of Arts (B.A.) degree in classical studies, French, German, Italian, Linguistics, Russian, and Spanish, which are described in alphabetical order, as well as courses in Portuguese.

The Department of Languages offers jointly with the English Department the

Bachelor of Arts degree in comparative literature studies (see page 34).

*Faculty:* Associate Professor Cashdollar, chairperson.

## Latin American Studies

The Departments of Sociology and Anthropology, History, and Languages offer a Bachelor of Arts (B.A.) degree in Latin American Studies. Students selecting this field must complete a minimum of 36 credits, as follows:

APG 315, HIS 381, 382 and one additional history course dealing with the major; 6 credits in Spanish or Portuguese from the approved list, LAS 397, PSC 201, ECN 363, and 9 credits of electives from approved list of courses.

Credits leading to the B.A. in Latin American Studies may also be taken at foreign universities or other universities in the U.S. having Latin American Studies programs with the approval of the Latin American Studies Committee.

A list of required and suggested courses acceptable for this program can be found on page 117. Courses not listed are not necessarily excluded from this program, provided that the subject matter deals in some way with Latin America. The Latin American Studies Committee must approve the student's program including any course substitutions.

The Latin American Studies Committee will assist students in the formulation and approval of their programs. The current chairperson is Thomas Morin, associate professor of Hispanic studies in the Department of Languages.

A total of 120 credits is required for graduation.

## Linguistics

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a major in linguistics.

*Faculty:* Associate Professor Cashdollar, chairperson (Department of Languages); Professor Rogers, section head.

Students selecting this field must complete a minimum of 27 credits, as follows: at least 12 credits from LIN 201, 202, 302, 330, 402, 497, 498; and the remaining credits necessary to complete the minimum requirement from APG 200, 409; ENG 330, 332, 430,

530, 536; FRN 503; GER 409; ITL 408; LIN 414; PHL 440; SPA 409; CMD 373, 375; SPE 410.

They must also attain competence in at least one language other than English equivalent to the terminal level of 206.

A total of 120 credits is required for graduation.

## Mathematics

The Department of Mathematics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in mathematics are described in the *Graduate School Bulletin*.

*Faculty:* Professor Suryanarayan, chairperson. Professors Beauregard, Datta, Driver, Fraleigh, Ladas, Lewis, P.T. Liu, Montgomery, Papadakis, Roxin, Schwartzman, Sine, Shisha, and Verma; Associate Professors R. Caldwell, Finizio, Grove, and Pakula; Assistant Professor Barron.

### BACHELOR OF ARTS

Students in this curriculum may tailor a program to suit their individual needs and interests. They should meet with their adviser no later than the end of the first semester of the sophomore year to plan a complete program. This program, and any subsequent changes in it, must be approved by the adviser and the department chairperson. It must contain at least 30 credits in mathematics, and include MTH 141 (3), 142 (3), 215 (3), and 243 (3) as well as two courses at the 400 level.

MTH 107, 108, and 109 are not open to students majoring in mathematics.

A total of 120 credits is required in the B.A. program.

### BACHELOR OF SCIENCE

Students in this curriculum may elect either the general program or the applied mathematics option.

**General Program.** This program stresses basic theories and techniques, and includes an introduction to the principal areas of mathematics. It is recommended for students considering graduate study in mathematics.

Students in this program must complete MTH 141, 142, 215, and 243. These courses should normally be taken in the freshman and sophomore years. Students must complete an additional 27 credits in mathematics, including MTH 316, 425, 435, 436, and 462. MTH 107, 108, and 109 may not be included. The student must take PHY 213, 285 (which may be counted toward the student's general education requirements) and PHY 214, 286. CSC 201 and 202 are recommended.

**Applied Mathematics Option.** This program is intended for the student who anticipates a career as an applied mathematician or mathematical consultant with an organization such as an industrial or engineering firm, or a research laboratory. The student learns the mathematical ideas and techniques most often encountered in such work. Although a theoretical foundation is developed, the applications are emphasized.

The student must take MTH 141, 142, 215, and 243, preferably by the end of the sophomore year. In addition, the student must complete MTH 437-438, CSC 201-202, 9 credits selected from Group I (Mathematics), and 9 credits selected from Group II (Applications).

Group I: MTH 143, 217, 244, 316, 363, 418, 435, 441, 444, 451, 452, 462, 471, 472, and any MTH course having one of these as a prerequisite.

Group II: CSC 240, 305, 311, 411, 413; ELE 210; EST 409, 412; IDE 432, 433; MCE 162, 263; MGS 365, 366, 375, 445; PHY 213-285, 214-286, 322, 331, 341; ZOO 460. Other courses may be used for this group with prior permission of the department.

MTH 435-436 may be substituted for MTH 437-438 if the former is not used in Group I.

Both programs require 130 credits for graduation.

## Medical Technology

The medical technology curriculum is administered by the Microbiology Department. This curriculum, leading to the Bachelor of Science (B.S.) degree, prepares men and women for work in hospitals or medical laboratories. During the first three years, the emphasis is on general education and basic courses in

biology, chemistry, mathematics, and physics necessary as background in the applied sciences. The courses of the senior year are taught off campus by the staffs of affiliated hospital schools of medical technology. The senior year is a 12-month program of study and starts soon after the completion of the third year of the curriculum, in June or early July. It is taken at one of the following hospitals which are about 30 miles from the main campus of the University: Miriam Hospital, Rhode Island Hospital, St. Joseph Hospital, which are in Providence; the Memorial Hospital of Pawtucket; or the Rhode Island Medical Center in Cranston. The clinical program includes didactic and laboratory instruction in the various areas of medical technology and prepares the student for the national certification examinations.

Applicants to this curriculum should have completed 62-65 credits by June of the sophomore year and should have taken all courses listed below for the first two years. Students are selected by the University Committee on Medical Technology and by program officials of the hospital schools. Since the number of students admitted to this professional curriculum is limited, interested students should consult early in their college career with the director so that they will be familiar with the requirements and application procedures. Flexibility in the curriculum permits the student who is not accepted to fulfill requirements for the Bachelor of Science degree in another concentration such as microbiology, zoology, or certain related health sciences.

Coordinator: Gregory Paquette.

A total of 130 credits is required for graduation.

### Freshman Year

First semester: 14 credits

CHM 101, 102 or CHM 103, 105 (4), BOT 111 or ZOO 111 (4), MTH 109 or 141 (3), and general education requirement<sup>11</sup> (3).

### Freshman Year

Second semester: 18 credits

CHM 112, 114 (4), ZOO 111 or BOT 111 (4), MTH 141 or 142 or CSC 201 or EST 407 (3), general education requirements (6) and MTC 102 (1).

### Sophomore Year

First semester: 17 credits

MIC 211 (4), CHM 227 (3), PHY 111, 185 (4), and general education requirements (6).

### Sophomore Year

Second semester: 16 credits

CHM 226 (2), 228 (3), PHY 112, 186 (4), general education requirements (6), and free elective (1).

### Junior Year

First semester: 17 credits

CHM 212 (4), MTC 301 (1), ZOO 242 (3), general education requirements (6), and free elective (3).

### Junior Year

Second semester: 16 credits

MIC 432 (3), BCP 311 (3), general education requirements (3), and free elective (7).

### Senior Year

32 credits

MTC 401, 402, 403, 404, 405, 406, and 407.

## Military Science (ROTC)

The Department of Military Science offers the Army Reserve Officers Training Corps (ROTC) program described on page 14.

Faculty: Professor McNamara, chairperson. Assistant Professors Gebhard, Hague, Litzler, and Sanfason.

## Music

The Department of Music offers a Bachelor of Arts (B.A.) degree and a Bachelor of Music (B.Mus.) degree. The Master of Music (M.M.) degree is described in the *Graduate School Bulletin*.

Faculty: Professor Heard, chairperson. Professors J.S. Ceo, Gibbs, Giebler, Kent, Motycka, Dempsey, Pollart, and Rankin; Associate Professors Fuchs and Langdon; Assistant Professor Wry; Special Artist Instructors Abbott, Buttery, Ceo, Chapple, Cobb, Dean, Fraioli, Gates, Heiken, Immonen, Marinaccio, Stabile, and Swanson.

<sup>11</sup>Language 101 and 102 are required if student enters without this equivalent.



## BACHELOR OF ARTS

Students selecting music as a major will complete 32 credits as follows: MUS 113, 114 (8), 215, 216 (6), 221, 222 (6), 251 (6), 317 (3), and upper division music history and literature (3).

The equivalent of MUS 101 is required as a prerequisite to MUS 221, 222. This may be met either by a placement examination or by taking the course as an elective. Transfer credits in music theory and performance must be validated by placement examination.

To conform with the requirements of the National Association of Schools of Music of which the department is a member, it is strongly recommended that at least 6 and up to 15 elective credits be taken in upper-level music courses. No more than 6 elective credits will be allowed in any one area: theory and composition, history and literature, and performance. An audition is required for the study of performance.

A total of 120 credits is required for graduation.

## BACHELOR OF MUSIC

Students can be admitted to the Bachelor of Music degree program only by audition and should contact the music department for specific requirements.

All students in this degree program must take the following music courses: MUS 113, 114 (8), 172 (1), 215, 216 (6), 221, 222 (6), 250 (0), and 317 (3) for a total of 24 credits. Students may meet the requirement of MUS 172 by passing the piano proficiency examination before the accumulation of 60 credits. Seven semesters of MUS 250 are required of all Bachelor of Music students. Attendance is required at a minimum of 75 percent of all scheduled afternoon student recitals.

The equivalent of MUS 101 is required as a prerequisite to MUS 221, 222. This may be met either by a placement examination or by taking the course as an elective. Transfer credits in music theory and performance must be validated by placement examination.

All bachelor of music students will take the piano proficiency examination at the conclusion of one year of study or by the end of the second semester of the sophomore year. Failure to pass the proficiency examination or any portion of it requires reexamination in succeeding

semesters. No one will graduate with a Bachelor of Music degree until this requirement is fulfilled.

In addition, each student selects one of the following majors.

A total of 125 credits is required for graduation (126 for music education).

**Classical Guitar.** Students selecting classical guitar must complete MUS 261 (12), 312 (2), 293 or 295 (4), 299H (4), 420 (3), 441-tablature (3), 461 (16), 465 (0), and upper division music history/literature (3).

**Voice.** Students selecting voice must complete MUS 261 (12), 242 (8), 311 (2), 293 or 295 (8), 461 (16), 465 (0), and upper division music history (3).

Students majoring in voice must also take 15 credit hours of foreign language in any three or more languages at any level. The requirement may be modified or satisfied by advanced placement.

**Piano or Organ.** Students selecting piano or organ must complete MUS 261 (12), 293 or 295 (2), 299A or 390 (6), 420 (3), 461 (16), 465 (0), and upper division music history/literature (3 or 4).

**Orchestral Instrument.** Students selecting orchestral instrument must complete MUS 261 (12), 312 (2), 321 (3), 290, 291, or 294 (8), 293 or 295 (2), 299 (2), 420 (3), 461 (16), 465 (0), and upper division music history/literature (3).

**Music History and Literature.** Students selecting music history and literature must complete MUS 251 (8), 290, 291, 293, 294, 295, or 390 (6), 293 or 295 (2), 407 (3), 408 (3), 420 (3), 430 (3), 431 (3), 432 (3), 433 (3), 434 (3), 441 (3-6) and 451 (8).

Students concentrating in music history and literature must have 15 credit hours of foreign languages with intermediate level proficiency in at least one language. The requirement may be modified or satisfied by advanced placement.

**Music Theory and Composition.** Students selecting music theory and composition must complete MUS 251 (8), 241 or 173, 175, 177, 179 and 4 elective credits for piano majors (8), 321 (3), 291, 293, 294, 295 or 390 (6), 293 or 395 (2), 418 (3), 420 (3), 423 (3), 441 (3), 451 (8), and upper division music history/literature (3 or 4).

Students majoring in composition must take MUS 117, 419 and 422.

**Jazz Studies.** Students selecting the jazz studies option must complete MUS 206 (3), 208, 209 (6), 251 (8), 306, 307 (6), 312 (2), 321 (3), 293 or 295 (2), 296 (8), 299M (2), 418 or 420 (3), 451 (8).

**Music Education.** Students majoring in music education must complete the following:

For all students: MUS 171, pianists exempt (1), 251 (8), 311, 312 (4), 321 (3), 340 (3), 451 and/or 452 (8), 455 (0), EDC 102 (3)<sup>12</sup>, 312 (3), and 484 (6).

In addition, students must select one of the following options:

For general preparation: MUS 173, 174 vocalists exempt (2), 169, 170, 175, 176, 177, 178, 179, 180 (8)<sup>13</sup>, 339 (3), 290, 291 or 294 (2), 293 or 295 (2), and 4 additional credits selected from 290, 293, 294, or 295 (4). Up to 4 credits of MUS 390 may be substituted for 290, 291, 293, 294, 295 electives.

For vocal specialization: MUS 170 guitarists exempt (1), 173, 174 vocalists exempt (2), 181, 182 pianists exempt (2), 242 pianists exempt (2), 339 (3), and 293 or 295 (8). Up to 4 credits of MUS 390 may be substituted for 293 or 295.

For instrumental specialization: MUS 169, 175, 176, 177, 178, 179, 180 (7)<sup>13</sup>, 339 (3), 291, 391 or 394 (wind and percussion majors must include 2 credits of 291 and 2 credits of 294) (8), and 293 or 295 (2). Up to 4 credits of MUS 390 may be substituted for 290, 291, or 294.

For jazz education specialization: MUS 169, 175-180 (6)<sup>13</sup>, 206 (3), 208 (3), 306 (3), 350 (2), 293 or 295 (2), 290, 291, 293, 294 or 295 (2), 296 (6), and 299M (2).

The piano proficiency examination, EDC 102, 312 and all courses listed above under music education, with the exception of MUS 321 and senior-level courses in performance, instrumental classes and major ensembles, must be completed before entering supervised student teaching. The practice teaching schedule must be preceded by a period of observation.

<sup>12</sup>EDC 102 may also be counted toward the social sciences requirement in the Basic Liberal Studies Program.

<sup>13</sup>One course in the student's major instrument area is exempt.

## Philosophy

The Department of Philosophy offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) program in philosophy is described in the *Graduate School Bulletin*.

*Faculty:* Professor Wenisch, chairperson. Professors Freeman, Hanke, Y.C. Kim, Peterson, Schwarz, Young, and Zeyl; Associate Professors Johnson, and Kowalski.

Students selecting this field must complete no less than 30 credit hours in philosophy. Students must take at least one course from each of the following: logic (101, 451), ethics (312, 314, 414), and metaphysics-epistemology (341, 342) plus at least two history of philosophy courses (321 to 324).

The remaining 15 credit hours may be chosen freely from the departmental offerings. However, students planning graduate work in philosophy are advised to take PHL 341, 342 and 451.

A total of 120 credits is required for graduation.

## Physics

The Department of Physics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in physics are described in the *Graduate School Bulletin*.

*Faculty:* Professor Pickart, chairperson. Professors Bonner, Cuomo, Desjardins, Kaufman, Kirwan, Letcher, Malik, Northby, Nunes, and Willis; Associate Professors Hartt, Kahn, and Penhallow; Emeriti Professors Dietz and Stone.

### BACHELOR OF ARTS

Students selecting this field must complete a minimum of 36 credits in physics, mathematics, and computer science, including: PHY 111, 112, 185, 186 or 213, 214, 285, 286 (8), PHY 322 (3), 331 (3), 381, 382 (6), 401 or 402 (1), 451 (3), 491, 492 (3), MTH 244 (3), CSC 201, 202 (6).

It is strongly recommended that students take MTH 141 and 142 in the freshman year. If the student is considering graduate study, it is recommended that courses in French, German or Russian be elected.

A total of 120 credits is required in the B.A. program.

### BACHELOR OF SCIENCE

This curriculum provides a general background in both theoretical and experimental physics. It forms an adequate foundation for further study at the graduate level toward an advanced degree, and also prepares the student for a career as a professional physicist in industry or government.

Initiative, independent solution of laboratory problems, and research are encouraged in the advanced laboratory courses.

In addition to the major, students are encouraged to use the large block of elective credits to develop a program of study as a minor (described under Curriculum Requirements on page 29) in applied or interdisciplinary fields, such as acoustics, geophysics, optics, energy, astronomy/astrophysics, atmospheric science, computational physics, mathematical physics, physics education, chemical physics, ocean physics, and engineering physics. As with all minors, it will be recorded on the student's grade transcript.

The following courses will usually be required for the B.S., but exceptions and/or substitutions are possible, and may be arranged upon consultation with the department. For example, a well-prepared student may enroll for physics in the first semester of the freshman year; or courses in a related discipline may be taken instead of physics courses.

A total of 129 credits is required for graduation.

*Freshman Year*  
First semester: 15 credits

MTH 141 (3) and general education requirements (12).

*Freshman Year*  
Second semester: 16 credits

MTH 142 (3), PHY 213, 285 (4), CSC 201 (3), general education requirements (6).

*Sophomore Year*  
First semester: 16 credits

MTH 243 (3), PHY 214, 286 (4), CSC 202 (3), general education requirements (6).

*Sophomore Year*  
Second semester: 15 credits

MTH 244 (3), PHY 334 (3) and 341 (3), and general education requirements (6).

*Junior Year*  
First semester: 18 credits

PHY 322 (3) and 381 (3), general education requirement (6), and free electives (6).

*Junior Year*  
Second semester: 18 credits

Mathematics elective at the 300 or 400 level (3), PHY 331 (3), 382 (3) and 420 (3), and free electives (6).

*Senior Year*  
First semester: 15 credits

PHY 483 (3), 451 (3) and 455 (3), MTH 461 (3), free electives (3).

*Senior Year*  
Second semester: 16 credits

PHY 484 (3), 402 (1) and 452 (3), and free electives (9).

## Political Science

The Department of Political Science offers the Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) in political science and Master of Public Administration (M.P.A.) programs are described in the *Graduate School Bulletin*.

*Faculty:* Professor Hennessey, chairperson. Professors Killilea, Leduc, Milburn, Stein, Warren, S.B. Wood, and Zucker; Associate Professors Rothstein and Tyler; Assistant Professor K. Murphy.

Students selecting this field must complete a minimum of 30 credits in political science, including PSC 113 (3) and 116 (3).

The remaining 24 credits will reflect the emphasis desired by the student, though at least one course in four of the following six fields must be selected: American politics and public administration, public law, comparative government, international relations, political theory, and political behavior.

A total of 120 credits is required for graduation.

## Portuguese

The Department of Languages offers a number of undergraduate courses in Portuguese.

*Faculty:* Associate Professor Cashdollar, chairperson. (Department of Languages). Associate Professor McNab; Lecturer Campos.

## Psychology

The Department of Psychology offers the Bachelor of Arts (B.A.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degree programs in psychology are described in the *Graduate School Bulletin*.

*Faculty:* Professor A. Lott, chairperson. Professors Berman, Biller, Grebstein, Gross, B. Lott, Merenda, Prochaska, Silverstein, Smith, Velicer, Vosburgh, and Willoughby; Associate Professors Cohen, Collyer, Kulberg, Quina, Stevenson, and Valentino; Assistant Professors Brady, Florin, Germain, and Rapport.

Students in this field may follow either a general program or a preparatory program for an advanced degree.

The general program requires a minimum of 30 credits to be distributed as follows: PSY 113 (3); at least one from the group PSY 232 (3), 235 (3), 254 (3); both PSY 300 (3) and 301 (3), plus additional psychology electives to total 30 credits. Students interested in careers at the B.A. level should consult the *Handbook for Psychology Majors* and their academic advisers to select additional courses.

The preparatory program adds to the requirements listed above: PSY 232 (3), 235 (3) and 254 (3); at least four courses from the group: PSY 310 (3), 335 (3), 381 (3), 385 (3), 391 (3) and 434 (3). Additional courses should be selected only after consultation with an adviser.

A total of 120 credits is required for graduation.

## Russian

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a major in Russian.

*Faculty:* Associate Professor Cashdollar, chairperson (Department of Languages). Associate Professor Aronian, section head.

Associate Professor Rogers; Assistant Professor Driver.

Students selecting this field complete at least 30 credits in Russian (27 credits for major in secondary education) not including RUS 101, 102.

A total of 120 credits is required for graduation.

## Sociology

The Department of Sociology and Anthropology offers the degree of Bachelor of Arts (B.A.) in sociology. The Master of Arts (M.A.) program in sociology is described in the *Graduate School Bulletin*.

*Faculty:* Professor Carroll, chairperson. Professors England, Gardner, Gelles, Gersuny, Rosengren, and Spaulding; Associate Professors Peters and Reilly; Assistant Professors Albert, Shea, and Travisano. Instructor Cornell.

Students selecting this major must complete a minimum of 30 credits in sociology, including: SOC 201 (3), 301 (3), 302 (3), and 401 (3).

SOC 301 and 302 should be taken in the junior year; SOC 401 is to be taken during the senior year whenever possible. In addition to the above requirements, majors are required to complete one 400-level seminar and at least two of the remaining five courses must be at the level of 300 or above. SOC 100 and SOC 102 cannot be taken for major credit.

Although the department does not offer a major in social welfare, students planning careers in social welfare, may take social welfare courses as electives. These courses do not count towards the major in sociology. Students interested in anthropology are referred to the anthropology major listed previously in the catalog.

A total of 120 credits is required for graduation.

## Spanish

The Department of Languages offers the Bachelor of Arts (B.A.) degree with a major in Spanish. The Master of Arts (M.A.) program in Spanish is described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Cashdollar, chairperson (Department of Languages). Associate Professor Navascués, section

head. Professor Hutton; Associate Professors Manteiga, Morin, and Trubiano.

Students selecting Spanish as a major will complete a minimum of 30 credits in Spanish (27 credits for major in secondary education). One 300-level course, SPA 481, 487 and one other 400-level course are required. SPA 101, 102, 121, 391, 392, and 393 cannot be counted toward the major. LIN 201 and 202 and, with permission of the adviser, the section head, the department chairperson, and the dean of the college, courses in allied fields such as history, art, and anthropology may also be selected. These requirements are the same for secondary education major.

A summer field workshop (SPA 410) in Spain or Spanish America is occasionally offered for 3 to 6 credits. For information, see the section head.

A total of 120 credits is required for graduation.

## Speech Communication

The Department of Speech Communication offers the Bachelor of Arts (B.A.) degree with curriculums in speech communication studies.

*Faculty:* Professor Devlin, chairperson. Professors Anderson, Bailey, Dillavou, and Doody; Associate Professors Brownell, Grzebien, Katula, and Schultz; Assistant Professors Rice, Rowland-Morin, and Wood; Instructor Alesandrini.

The department programs provide maximum flexibility in planning for a wide variety of academic and occupational goals in speech communication studies. The curriculum is personalized for each student. While the student plays a dominant role in curriculum planning, his or her program is closely supervised by the adviser. Specific curricular, extracurricular, and internship programs are planned as integral parts of each student's program. Departmentally approved courses give the student broad variety or specific depth, dependent on the student's needs and goals. Courses outside the department which are related to student communication needs and goals are encouraged and may be counted as major credits.

Courses in speech communication

also count toward a communication or communicative disorders major in the College of Human Science and Services and other courses count toward a minor in public relations when taken in conjunction with specific journalism and marketing courses.

Thirty credits are the minimum required for students majoring in speech communication.

**Speech Communication Studies.** This major requires SPE 101, 304, and at least 12 credits of courses at the 300 level. The undergraduate major in the department may pursue studies in any of the following options, dependent upon his or her interests and goals. Students are required to select 15 of their major credits within one of the following tracks:

Individualized Program. Students in consultation with adviser will plan a program to meet their needs.

Business and Professional Communication. Five of the following: SPE 103, 210, 220, 302, 315, 319, 320, 400, 430.

Communication Theory. Five of the following courses: SPE 103, 200, 220, 300, 301, 315, 320, 337, 400, 410, 415.

Oral Interpretation. Five of the following courses: SPE 103, 231, 331, 332, 333, 410, 431, 433.

Rhetoric and Public Address. Five of the following courses: SPE 200, 205, 210, 215, 302, 317, 400, 415, 420, 430.

A total of 120 credits is required for graduation.

## Theatre

The Department of Theatre offers a Bachelor of Arts (B.A.) degree and a Bachelor of Fine Arts (B.F.A.) degree. Permission to register for work toward the B.F.A. in theatre must be obtained through a departmental interview.

**Faculty:** Associate Professor Swift, acting chairperson. Professor Emery; Associate Professor Wheelock; Assistant Professors Armstrong, Glosson, and Wittwer; Technical Director Galgoczy; guest artists supplement the regular faculty in all areas of theatre.

Productions at the University cover the range of theatre forms, ancient to modern, with emphasis on contemporary and experimental work. All members of the University community may participate in productions.

## BACHELOR OF ARTS

The B.A. program in theatre is intended for students who wish to receive a general education in theatre within a liberal arts framework. A total of 33 credits is required as follows: THE 111 (3); 117 (3); 161 (3); 181 (3); 221 (3); 250 (3); 261 (3); 321 (3); 381, 382 (6); 383 or 481 (3). B.A. candidates are required to take ENG 472. B.A. candidates are urged to complete THE 111, 117, 161, and 181 by the end of their freshman year.

B.A. candidates may elect up to 12 more credits in theatre with the approval of their department adviser.

A total of 120 credits is required for graduation.

## BACHELOR OF FINE ARTS

The B.F.A. program in theatre is intended for highly motivated students who wish their education to emphasize a major theatrical field of interest. The program offers concentrated study in acting or design, and theatre technology. All B.F.A. students are required to complete the following core courses: THE 111 (3); 117 (3); 161 (3); 181 (3); 221 (3); 250 (3); 261 (3); 381, 382 (6). All B.F.A. candidates must take ENG 472. All B.F.A. candidates are urged to complete THE 111, 117, 161, and 181 by the end of their freshman year.

In addition to these requirements each student selects one of the following areas of specialization.

**Acting.** Students selecting acting must complete an additional 26 credits including the following: THE 211, 212 (6); 311, 312 (8); 350 (1); 351 or 352 (3); 411, 412 (8). All B.F.A. candidates must take ENG 472. Recommended electives include courses in related fields such as anthropology, art, music, literature, psychology, history, speech, and sociology.

**Design and Theatre Technology.** Students selecting design and theatre technology must complete an additional 25-28 credits including THE 262 (3); 350 (1); 2 out of 3 of the following course groups: 1) 351, 352, 355 (9); 2) 361, 365, 366 (9); 3) 371, 375 (6); 2 out of the 3 following courses: 455, 465, 475 (6). All B.F.A. candidates must take ENG 472. Recommended electives

include ART 207, 251, 252, and courses in related fields such as anthropology, art, literature, music, psychology, history, and sociology.

B.F.A. students selected for an internship program may substitute up to 12 credits from theatre courses in their area of specialization, subject to the approval of the department. Requirements for the B.F.A. may be modified under special circumstances by permission of the department.

A total of 124 credits is required for graduation.

## Urban Affairs

The Urban Affairs Program Coordinating Committee offers three majors in the College of Arts and Sciences for the Bachelor of Arts (B.A.) degree: Urban Social Processes in the Urban Environment, Policy Formation in the Urban Environment, and Spatial Development in the Urban Environment. The courses that comprise these majors are offered by colleges throughout the University.

The Urban Affairs Program is described on page 11.

Students who select one of these three majors must complete six courses in the common core and four courses chosen from the specialization courses. Each of the majors requires a minimum of 30 credits.

Students who wish to major in one of these should consult the appropriate member of the Urban Affairs Program Coordinating Committee for assistance in the formulation and approval of their majors.

**Urban Social Processes.** This major examines the functions of urban social systems, explores urban social issues which affect the lives of individuals in an urban environment, and investigates individual and systems-change strategies. Students gain an understanding of the systemic forces which act on individuals in urban societies to produce both positive and negative outcomes. Poverty and social class, the welfare system, race, crime, rapid environmental change, all generate social issues which take on particular significance in an urban setting and have a dramatic impact on the lives of urbanites. In addition to a thorough grounding in theory, students are directed toward research and intervention



techniques which they may extend, with graduate training, into the social sciences, criminology, social work, community planning, and other urban-oriented fields. Students seeking jobs at the baccalaureate level may work in social agencies (e.g., welfare, youth development, the criminal justice system), the governmental departments which sponsor and monitor these agencies, or specialized educational facilities (e.g., halfway houses, pre-school enrichment programs, alternative high schools).

Students are expected to satisfy the common core requirements. In addition, they are also required to select 4 courses from the following: APG 319; ECN 401, 403; HCF 220, 434; HIS 339, 343; MGT 301; PSC 420, 483, 486; PSY 335; SOC 314, 316, 330, 336, 240, 320, 318, 438; SPE 315. Students are encouraged to arrange for an urban affairs internship.

**Policy Formation.** This major identifies the decision-making processes within the metropolis, examines the ways in which public policies are formulated and implemented, and considers ideas about the substance as well as the outcome of the policy-formation processes. An understanding of such decision-making processes requires knowledge of the political, administrative, managerial, planning, and economic aspects of urban life. Students completing the major should be prepared for entry-level administrative jobs in government agencies, business firms and community organizations, or for activist careers in politics. They might undertake graduate work in law, public administration, community planning, business, or related disciplines.

Students are expected to satisfy the common core requirements. They are also expected to select four courses from the following: ECN 342, 401, 402, 403, 464; HIS 323, 324, 339, 340, 341, 343, 363; PSC 460, 466, 483, 495, 498; CPL 410; FIN 331, 341; MGT 321, 422, 423; REN 310; SOC 336, 240, 242, 214; GMA 421, 432, 516. Practicum or internship experience is recommended in this major. It may be obtained through URB 397.

**Spatial Development.** This major gives the student an interdisciplinary viewpoint of the spatial structure and environmental character of the city. The

curriculum is designed to focus special attention on the arrangement, allocation and interrelationships of human and physical resources. Man's relation to the urban ecosystem is examined in terms of the processes, patterns, networks and activities that produce the spatial and temporal organization of urban communities. Analytical and methodological skills may be acquired from courses in cartography, remote sensing, and statistics. The structure of the major should prepare the student to deal effectively with the increasing problems of rapid urban growth and environmental deterioration.

Employment opportunities are available in such activities as urban systems analysis, economic impact studies, cartographic drafting and air photo analysis, industrial location and regional development, and urban environmental problems. Spatial development students should be prepared for work in organizations or agencies that handle questions such as equal allocation of resources, reduction of regional disparities in goods and services, and developing effective alternatives to problems in housing, poverty, pollution, and other human concerns. These organizations can be in either the private or the public sector.

Students are expected to satisfy the common core requirements. They are also required to select four courses from the following: HIS 399; CPL 410, 434, 520; ZOO 262; FIN 341; PSC 460, 466; SOC 214; ECN 402; GMA 421, 516; INS 313; BSL 333; CVE 315; EGR 204. Students are encouraged to acquire an internship experience.

## Women's Studies

This new interdepartmental program in the College of Arts and Sciences leads to a Bachelor of Arts (B.A.) degree in Women's Studies. The aim of the program is to provide an option for students who are interested in the interdisciplinary study of the culture and experiences of women.

The Women's Studies program requires 30 credits for a major. Four required courses are: WMS 200; a statistics (e.g., EST 220, PSY 300) or methodology course (e.g., ENG 310, SOC 301, SPE 304) approved by the Advisory Committee; WMS 300; and WMS 400. Six courses to complete the concentration may be selected from the

following: ART 285; ENG 260, 385; HCF 330, 420, 430, 432, 437, 505, 559; HIS 118, 145, 347; CNS 320, 401; NUR 150 or 260; FSN 308; PED 475; PSY 480; SOC 212, 242, 316, 413; SPE 310 (Topic: Rhetoric of the Women's Movement); SPE 420 (Topic: Rhetoric of Early Women Suffragists); WMS 350, 450. In addition to this list, there are special courses offered by various departments each year which may also be selected with prior approval by the Advisory Committee.

The Women's Studies Advisory Committee also strongly recommends that majors take an additional 18 credits in a specialized area as a minor.

A total of 120 credits is required for graduation.

# College of Business Administration

Richard R. Weeks, Dean  
Dennis W. McLeavey, Associate Dean

The 11 majors in the College of Business Administration allow the student to develop competence in a special field of interest and prepare him or her to meet the changing complexities of life and leadership in the business community. Majors are offered in accounting with emphasis possible on governmental, private, and public accounting; finance; general business administration; insurance; management; management information systems; management science; marketing; marketing with a textiles option; personnel management; and production and operations management.

Basic courses required of all undergraduates at the University introduce the student to the humanities, social sciences, physical and biological sciences, letters, foreign language and culture, and the arts. The business curriculums develop the student's professional capabilities through a broad group of business courses with specialization in one area of study. Business programs provide a strong foundation in accounting, computer science, marketing, organizational management, personnel, industrial relations, production and operations management, and statistics. The college emphasizes the behavioral studies and computer technology to meet the needs of the business community and society as a whole. Emphasis is placed upon the total business environment as a part of the national and world economic structure. Theory, analysis, and decision-making



are stressed in all areas of learning.

The College of Business Administration is a professional school and has divided its courses into lower and upper divisions. The lower division courses constitute those taught in the freshman and sophomore years; the upper division — those taught in the junior and senior years. Courses taken by transfer students at the lower division level may be applied to satisfying upper division requirements only after successful completion of a validating examination. All 500- and 600-level courses offered by departments in the College of Business Administration are open to matriculated graduate students only.

A student enrolled in this college must complete the curriculum in one of the majors and must obtain a cumulative quality point average of 2.0 or better for all required courses in the major. Students wishing permission to substitute required courses or waive other requirements may petition the college's Scholastic Standing Committee. Petition forms are available in the dean's office.

Due to limited staff and facilities, transfers from University College to the undergraduate degree programs in business administration must be limited to only a few more than 300 a year. Those admitted stand in the highest 300 when cumulative quality point averages are computed at the end of the third semester. Although cumulative averages are not the sole criterion for admission,

students with overall quality point averages of less than 2.5 are advised that there is little chance for admission to these programs. Students who have not satisfied entrance requirements may petition the Scholastic Standing Committee of the college for a waiver of those requirements during their fourth or succeeding semesters. Students in the University College business programs who have not met entrance requirements to the college are permitted to enroll only in 100- and 200-level business courses and in non-business courses.

To ensure that students in business majors have access to required courses, upper level courses will be open only to juniors, seniors, and graduate students. A strict registration priority will be followed. Highest priority will be given to seniors in the College of Business Administration and in the major, followed by graduate students, juniors in the college and the major, seniors in the college but not in the major, juniors in the college but not in the major, seniors in other colleges, and juniors in other colleges. Students following an approved minor will be assigned as though they were in the college but not in the major.

## Curriculum Requirements

The following two years are common to all majors except marketing textiles and personnel management.

**The Freshman Year Program** is 15 credits in each semester. The sequence MGS 101-102 is begun in the first semester and finished in the second. A speech elective from Group C is taken in either of the two semesters with the balance of credits in general education.

**The Sophomore Year Program** is 15 credits in each semester. The ACC 201-202, ECN 125-126, and MGS 201-202 sequences are begun in the first semester and completed in the second. MGS 207 and MGT 227 are taken in alternate semesters. The balance of credits is made up of General Education and free electives.

#### General Education Requirements.

Students are required to select and pass 39 credits of coursework from the General Education requirements as listed on page 8. Specific requirements of the College of Business Administration in each group are listed below:

Groups A, F, L, and N. Any course for which prerequisites have been met.

Group M. MGS 101 in the freshman year.

Group S. ECN 125, 126 in the sophomore year.

Group C. Speech elective from Group C in the freshman year; MGT 227 (Group Cw) in the sophomore year.

**Electives.** Professional electives are upper-level courses offered by departments in the College of Business Administration.

Liberal electives are courses offered by departments outside the College of Business Administration.

Free electives may be either professional or liberal electives.

**Minor — Optional.** After choosing a major field, students may elect to declare a minor which will appear on their transcripts as a category separate from their major. Credit may be drawn from any combination of major, distribution, electives, and course-level categories. A minor may be defined as (1) the completion of 18 or more credits offered within a department and approved by the department chairperson or (2) the completion of 18 or more credits of related studies offered by more than one department and approved by a member of the University faculty, competent in the minor, and the Scholastic Standing

Committee of the College of Business Administration. Students must declare their minor no later than the end of the add period of the semester they expect to graduate.

**International Business Studies.** In cooperation with the Department of Languages, the College of Business Administration offers an opportunity for students to include an international emphasis with their undergraduate business major. The business requirements include a major in finance, management, or marketing with professional electives in Multinational Finance, International Dimensions of Business and International Marketing. The student also develops a minor in a language, choosing from French, German, Italian, or Spanish. In addition, studies in international politics, European history, and courses in history and literature of the target country are included.

## Accounting

The Department of Accounting offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree, which provides the education recommended by the American Institute of Certified Public Accountants for the practice of public accounting, and the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in accounting are described in the *Graduate School Bulletin*.

**Faculty:** Associate Professor Schwarzbach, chairperson. Professors Martin, Matoney, and Vangermeersch; Assistant Professors Cairns, Hamilton, Looney, and Rebele.

The increased scope of governmental and business activities has greatly extended the field of accounting and has created an unprecedented demand for accountants both in government and in industry. This curriculum has been designed to meet that demand.

In addition to providing a general cultural and business background, the curriculum offers specialized training in the fields of general accounting, cost accounting, and public accounting. It offers specific, basic training to students who wish to become general accountants, industrial accountants, cost analysts, auditors, credit analysts,

controllers, income tax consultants, teachers of specialized business subjects, certified public accountants, government cost inspectors, government auditors.

The broad scope of the courses offered makes it possible for a student who is interested in any of the fields of accounting to obtain fundamental training in the field of his or her choice, whether this training is to be used as an aid to living or as a basis for graduate study.

#### Junior Year

First semester: 15 credits

ACC 311 and 321, ECN or FIN elective,<sup>1</sup> FIN 301, and MGT 301.

#### Junior Year

Second semester: 15 credits

ACC 312, 443, MKT 301, MGS 309, and 364.

#### Senior Year

First semester: 15 credits

ACC 431 and 461, BSL 333, and 6 credits in free electives.

#### Senior Year

Second semester: 15 credits

ACC 415, BSL 334 or 442, MGT 410, a professional elective, and a free elective.

**Note:** One free elective must be chosen from GMA 131, PSC 113, MGT 380, or PHL 312. Another must be chosen from PSY 113, SOC 100, 102, or 204.

## Finance

The Department of Finance and Insurance offers a curriculum in finance leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in finance is described in the *Graduate School Bulletin*.

**Faculty:** Associate Professor Lord, chairperson. Professor Poulsen; Associate Professors Dash and Rhee; Assistant Professors Briden, Carlson, Chang, Leistikow, and Severns.

<sup>1</sup>This may be any 300- or 400-level ECN or FIN course except FIN 341.

A major in finance prepares for managerial positions in the private, public and not-for-profit sectors of the economy. The curriculum emphasizes both financial decision-making and implementation.

Careers in finance are to be found in (1) commercial banking and other financial institutions; (2) security analysis, portfolio, and related investment management; (3) corporate financial management leading to positions as treasurer, controller, and other financial administrative positions; (4) financial administration tasks in federal and state agencies as well as in the non-profit sector in hospitals, nursing homes, and educational institutions.

#### Junior Year

First semester: 15 credits

BSL 333, FIN 301 and 331, MGT 301, and a liberal elective.

#### Junior Year

Second semester: 15 credits

FIN 322, MGS 309, MKT 301, a professional elective, and a liberal elective.

#### Senior Year

First semester: 15 credits

Finance elective, three professional electives, and a free elective.

#### Senior Year

Second semester: 15 credits

Two finance electives, MGT 410, a professional elective, and a free elective. Finance electives must be drawn from FIN 401, 420, 425, 431, 433, 442, 452, and 460.

## General Business Administration

The College of Business Administration offers a curriculum in general business administration leading to the Bachelor of Science (B.S.) degree. The general business administration curriculum offers the student an opportunity to study all phases of business operation. It is particularly suitable for (1) those students who are planning to operate their own businesses and are seeking a broad business background, (2) those who are preparing for positions in large organizations with training programs in which specialization is taught after employment, and (3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

Students who major in the general administration curriculum shall be limited to a maximum of 9 credit hours of professional electives in a specific major. A general business administration student should take a broad spectrum of courses and not concentrate in one special field of study.

#### Junior Year

First semester: 15 credits

FIN 301, MGS 309, MKT 301, MGT 301, and a free elective.

#### Junior Year

Second semester: 15 credits

FIN elective, an MKT elective, and MGT elective at the 300 level, INS 301, and a free elective.

#### Senior Year

First semester: 15 credits

BSL 333, two professional electives, and two free electives.

#### Senior Year

Second semester: 15 credits

MGT 410, three professional electives, and a free elective.

## Insurance

The Department of Finance and Insurance offers a curriculum in insurance leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in insurance is described in the *Graduate School Bulletin*.

Insurance is a basic industry which functions throughout the economy to indemnify loss and reduce risk. In performing these functions, insurance companies, through their home and branch offices, their agencies and bureaus, currently employ about a million persons in a great variety of jobs (selling, administrative, technical, research, etc.).

For success in this industry, the professional concept with its emphasis on expert knowledge has become increasingly important, and students in this curriculum are prepared for and encouraged to work toward the professional designations conferred by the American College of Life Underwriters (C.L.U.) and the American Institute of Property and Liability Underwriters (C.P.C.U.).

The curriculum offers comprehensive preparation for diversified career opportunities in insurance, including satis-

faction of state requirements for agents' and brokers' licenses in fire and marine, casualty and surety, and life and accident-sickness fields. It is approved by state insurance departments in Rhode Island and New York.

#### Junior Year

First semester: 15 credits

BSL 333, FIN 301, INS 301, MGT 301, and a professional elective.

#### Junior Year

Second semester: 15 credits

INS 313, 325, FIN 331, MKT 301, and a professional elective.

#### Senior Year

First semester: 15 credits

MGS 309, two INS electives, a liberal elective, and a free elective.

#### Senior Year

Second semester: 15 credits

INS\* elective, MGT 410, a professional elective, a liberal elective, and a free elective. The three INS electives must be chosen from INS 414, 433, 471, or either FIN 341 or 442.

## Management

The Department of Management offers a curriculum leading toward the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in management is described in the *Graduate School Bulletin*.

*Faculty:* Professor Overton, chairperson. Professors Coates, deLodzia, Schmidt, and Sink; Associate Professors Comerford, Laviano, and Scholl; Assistant Professors Dunn, Hetzner, Hickox, and Hunt.

This curriculum is intended to provide the student with a background in the conceptual, analytical, and applied aspects of the management of organizations. The areas of study focus upon decision-making from the perspective of the policy sciences. Courses tend to cluster in the areas of behavioral science, including organizational theory, business law, general business administration and policy, and industrial and labor relations. Courses are carefully integrated to include an overall introduction to business administration, with a number of complementary areas of study in



organizational theory and behavior, the management of human resources, industrial and labor relations, personnel administration, general business administration, and business law.

Careers in business, government, hospitals, and other organizations are open to students who have successfully completed the curriculum. These studies also provide a good background for graduate programs in management.

#### Junior Year

First semester: 15 credits

FIN 301, MKT 301, MGT 301, one professional elective, and one free elective.

#### Junior Year

Second semester: 15 credits

MGS 309, MGT 304, 305, one free elective, and one liberal elective.

#### Senior Year

First semester: 15 credits

BSL 333, MGT 303, 380, and 407, and a free elective.

#### Senior Year

Second semester: 15 credits

MGT 410 and 423, one professional elective, and two free electives.

### Management Information Systems

The Department of Management Science offers a curriculum in management information systems leading toward the Bachelor of Science (B.S.) degree. The field of information systems is concerned with the collection, storing, processing, structuring, retrieval, and reporting of information to assist managers in the operations, management, and decision-making functions of an organization.

The program provides a thorough grounding in computer technology, systems analysis, combined with business and management training.

#### Junior Year

First semester: 15 credits

BSL 333, FIN 301, MGS 309, 307, 483.

#### Junior Year

Second semester: 15 credits

MKT 301, MGT 301, MGS 364, 486, professional elective.

#### Senior Year

First semester: 14 credits

MGS 485, MGS elective, 2 professional electives, and liberal elective.

#### Senior Year

Second semester: 15 credits

MGS 488, MGT 410, MGS elective, professional elective, and a free elective.

### Management Science

The Department of Management Science offers a curriculum in management science leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in management science is described in the Graduate School Bulletin.

Faculty: Professor Jarrett, chairperson. Professors Armstrong, Budnick, Kim, Koza, McLeavey, Mojena, Narasimhan, Rogers, and Shen; Associate Professors Ageloff, Humphrey, Mangiameli, and Sternbach; Assistant Professor Westin.

Management science (MGS) is concerned with the development and application of quantitative techniques to the solution of problems faced by managers of public and private organizations. More specifically, theory and methodology (tools) in mathematics, probability, statistics, and computing are adapted and applied in the identification, formulation, solution, implementation, control, and evaluation of administrative or decision-making problems.

The MGS major relates to the interface between quantitative techniques and their application in the real world. Upon graduating, majors will be qualified for (1) staff positions responsible for implementing and communicating quantitative approaches to decision-making, (2) management trainee programs which lead to assignments in any of the functional areas of an organization, or (3) graduate study leading to a master's degree or a doctorate.

#### Junior Year

First semester: 15 credits

BSL 333, FIN 301, MGS 301, 370 and MKT 301.

#### Junior Year

Second semester: 15 credits

MGS 309, 365, MGT 301, a professional elective, and a free elective.

#### Senior Year

First semester: 15 credits

MGS 366, 475, two professional electives, and a free elective.

#### Senior Year

Second semester: 15 credits

MGT 410, an MGS elective, a professional elective, and two free electives.

### Marketing

The Department of Marketing offers a curriculum leading to the Bachelor of Science (B.S.) degree. Career tracks are formed from elective courses for specialization in advertising, retailing, sales management, product management, international marketing, marketing research, and public and non-profit sector marketing. The marketing-textiles option, leading to the Bachelor of Science degree, may also be pursued in the Department of Marketing. This program is offered in conjunction with the Department of Textiles, Fashion Merchandising and Design. The option is designed to prepare students for managerial positions in the textile industry. The Master of Business Administration (M.B.A.) degree with an opportunity for specialization in marketing is described in the Graduate School Bulletin.

Faculty: Professor Nason, chairperson. Professors Alton, Della Bitta, N. Dholakia, R. Dholakia, Hill, Johnson, and Weeks; Assistant Professors Lessne, Lysonski, and Seymour.

A major focus of marketing is the determination of product and service needs of consumers and industries. Marketing research, information systems, and analysis are used in the development and management of products and services as well as the design and execution of communications, pricing, and distribution channels.

#### Junior Year

First semester: 15 credits

FIN 301, MGT 301, MKT 301, and two free electives.

#### Junior Year

Second semester: 15 credits

MGS 309, MKT 415, one MKT elective, a professional elective, and a free elective.

**Senior Year**

First semester: 15 credits

BSL 333, two MKT electives, a professional elective, and a free elective.

**Senior Year**

Second semester: 15 credits

MGT 410, MKT 409, two MKT electives, and a professional elective.

**Marketing-Textiles Option****Freshman Year**

First semester: 16 credits

MGS 101, TMD 103, CHM 103 and 105, an art elective from Group A, and an elective from Group F.

**Freshman Year**

Second semester: 15 credits

MGS 102, a speech elective from Group C, one elective each from Groups L, A, and F.

**Sophomore Year**

First semester: 15 credits

ACC 201, ECN 125, MGS 201 and 207, and MGT 227.

**Sophomore Year**

Second semester: 16 credits

ACC 202, ECN 126, MGS 202, CHM 124, and TMD 224.

**Junior Year**

First semester: 15 credits

FIN 301, MGT 301, MKT 301, TMD 303, and 240 or 340 or 440.

**Junior Year**

Second semester: 15 credits

MGS 309, MKT 415, TMD 403, a MKT elective, and a free elective.

**Senior Year**

First semester: 15 credits

BSL 333, two MKT electives, a TMD elective, and a free elective.

**Senior Year**

Second semester: 15 credits

MGT 410, MKT 409, two MKT electives, and TMD 433.

**Personnel Management**

The Department of Management offers a curriculum in personnel management leading to the Bachelor of Science (B.S.) degree. The field of personnel management is concerned with the management and effective utilization of human resources in traditional functions such as recruitment, selection, development,



motivation, and compensation, and the industrial relations areas of collective bargaining, labor dispute settlement, labor history, and labor organizations. Additionally, the legal, social, and organizational frameworks and requirements are focused upon with required courses in labor relations law, social security, and protective labor legislation (OSHA, unemployment and workers' compensation, EEO, etc.), organizational behavior, labor economics, and recommended courses in business and labor history.

The personnel management curriculum provides a broad, but rigorous and structured preparation for professional opportunities in Personnel Management within large and small industrial or service organizations in the public sector (federal, state, local), not-for-profit organizations, and for professional staff positions within trade unions and other employee organizations. Additionally, qualified students will be encouraged to continue their studies within specialized master's and Ph.D. programs.

**Freshman Year**

First semester: 15 credits

MGS 101, PSY 113 is recommended as a liberal elective, one elective each from Groups A, F, and N.

**Freshman Year**

Second semester: 15 credits

MGS 102, HIS 143 is recommended as a Group L elective, and one elective each from Groups A, F, and N.

**Sophomore Year**

First semester: 15 credits

ACC 201, ECN 125, MGS 201, 207, and a group C elective.

**Sophomore Year**

Second semester: 15 credits

ACC 202, ECN 126, MGS 102, MGT 227, and HIS 348 is recommended as a Group L elective.

**Junior Year**

First semester: 15 credits

FIN 301, MGT 301, 303, 321, and MKT 301.

**Junior Year**

Second semester: 15 credits

MGS 309, MGT 304, 422, 437, and BSL 333.

**Senior Year**

First semester: 15 credits

MGT 410, 423, 435, 436, and INS 433.

**Senior Year**

Second semester: 15 credits

MGT 424, 430, 439, and two free electives.

**Production and Operations Management**

The Department of Management Science offers a curriculum in production and operations management leading to the Bachelor of Science (B.S.) degree. The Master of Business Administration (M.B.A.) degree with an

opportunity for specialization in production and operations management is described in the *Graduate School Bulletin*.

Issues, concepts, and techniques encountered in efficiently managing the modern production function in industry and business are the main concerns of this curriculum. The modern production function is here defined in a wider sense, to include all kinds of operations which employ men and machines to produce visible goods as well as to render intangible services. A basic understanding of the management task of design and evaluation of the possible alternative operations and processes is emphasized. Practice and implications of computer-based systems and operations in management are also investigated.

The operations management major prepares students to become certified production and inventory controllers. Certification examinations are administered by the national Educational Testing Service (ETS) and prepared by practitioners in the American Production and Inventory Control Society. Coursework in the major goes well beyond that necessary for the examinations and should put the students at the forefront of the field.

Among the topics covered in the major are: forecasting, capacity planning, inventory planning, material requirements planning, and operations scheduling and control.

#### Junior Year

First semester: 15 credits

FIN 301, MGS 309, MGS 364 or 301 (students electing MGS 301 must complete the sequence MGS 365-366), MKT 301, and a free elective.

#### Junior Year

Second semester: 15 credits

MGS 310, 483, MGT 301, a professional elective, and a free elective.

#### Senior Year

First semester: 15 credits

BSL 333, MGS 311, 445, MGT 304, and a professional elective.

#### Senior Year

Second semester: 15 credits

MGS 458, MGT 410, two professional electives, and a free elective.

## College of Continuing Education

Thomas R. Pezzullo, Dean

The College of Continuing Education offers classes and degree programs in continuing education and degree programs designed for adults whose family or work responsibilities have caused interruption in their formal post-high-school education. Academic programs lead to Bachelor of Science degrees in business administration; industrial engineering; nutrition and dietetics; food science technology; general home economics; home economics education; human development, counseling and family studies; and textiles and clothing. Bachelor of Arts degrees may be obtained in economics, English, history, psychology, and speech communication. The Bachelor of General Studies degree offers majors in business institutions and human studies. Graduate level programs include Master of Business Administration (including an option for experienced executives), Master of Library Science, Master of Marine Affairs, Master of Public Administration, and graduate degrees in Computer Science, Electrical Engineering, and Mechanical Engineering and Applied Mechanics through special arrangement with several high technology firms in the state. For curriculum requirements refer to the appropriate sections in this bulletin.

Certification programs for various professions as well as individual credit and non-credit (CEU)<sup>1</sup> courses are also offered. In addition, institutes, seminars, conferences, and special courses are planned for business, industry,



labor, government, and the professions.

Courses are offered on weekday mornings, afternoons, and evenings, and on Saturdays in the fall, spring, and summer. Students enrolling in a degree program may attend at times most convenient for them. The college also operates community centers in Kingston and Middletown.

**Summer Session.** The College of Continuing Education has administrative responsibility for developing, scheduling and coordinating all summer offerings of the University of Rhode Island. Day and evening courses are offered in two five-week terms at Kingston and Providence. In addition, a number of special programs, including study abroad, are offered at varying dates in the alternate term. Student may attend either or both campuses and enroll in day or evening courses offered in any summer term. Students expecting to apply summer credit to an academic degree program are advised to obtain prior approval from their academic dean before registering. Maximum course load is 7 credits per summer term including simultaneous courses in the alternate term. Exceptions are allowed with permission of the student's academic dean.

<sup>1</sup>Continuing Education Unit.

## Bachelor of General Studies

The College of Continuing Education's own degree program, the Bachelor of General Studies (B.G.S.) is a time-shortened undergraduate program for adults who have had no formal schooling for at least five years. The B.G.S. program is useful both for students who have never been to college and for those who dropped out of college at some point in the past. For the latter group, B.G.S. offers a creative approach to bringing forward previous educational experience and applying it to this adult degree program. Because there are several alternative ways to meeting admission requirements for the program, the admissions process begins with an interview with a BGS adviser in the Academic Programs Office of the College of Continuing Education.

The B.G.S. program consists of six required sections listed below.

**The Pro-Seminar.** (4 credits) This required reentry course (BGS 100) introduces adult students to the processes of academic thought and inquiry, builds confidence in their capacity to do college-level work, and helps them identify their scholastic strengths and interests. During the Pro-Seminar students are required to take the College Level Examinations Program (CLEP) General Examinations (for which there is a fee). CLEP credits may be applied toward the General Education requirements.

**General Education Requirements.** (39 credits) Students in the B.G.S. program must meet the University's General Education requirements as explained on page 8 of this bulletin. B.G.S. students may use BGS 390, 391, and 392 to fulfill General Education requirements or may take other approved General Education courses appropriate to their program. Students should consult frequently with B.G.S. advisers.

**Majors.** (45 credits) B.G.S. students have a choice of two multi-disciplinary majors: business institutions and human studies. Each consists of 15 three-credit courses.

Both the human studies major and business institutions major allow students to take courses in several disciplines to meet their educational goals in a non-traditional way. Although the business institutions

major is carefully prescribed, the student will note that the human studies program encourages the student to work creatively with an adviser to design an individualized major that meets both student needs and the general goals of the program.

### Business Institutions Major

ACC 201	Elementary Accounting I
ACC 202	Elementary Accounting II
MGT 227	Business Communications
BSL 333	Law in a Business Environment
ECN 125	Economic Principles I
ECN 126	Economic Principles II
CSC 201	Introduction to Computing I
FIN 301	Financial Management
MGS 101	Introduction to Quantitative Analysis I or MTH 109
	Algebra and Trigonometry
MGS 102	Introduction to Quantitative Analysis II or MTH 141
	Introductory Calculus
MGS 201	Managerial Statistics or EST 220
	Statistics in Modern Society
MGS 309	Production Management
MGT 301	Fundamentals of Management
MKT 301	Marketing Principles

In addition to the above required courses, students must elect one liberal elective course offered by a department outside their majors. Most courses that fulfill these major requirements are available in Providence in the evening. With careful planning, however, it is possible for students to complete approximately two-thirds of the program's requirements in evening courses at the Kingston campus.

### Human Studies Major

This major requires a social science core of 24 credits selected from courses in economics, geography, history, political science, psychology, and sociology and anthropology (including social welfare), distributed among the disciplines as follows: four courses (12 credits) in one, two courses (6 credits) in a second, and two courses (6 credits) in a third. No more than two introductory level courses may be used, and of these only APG 203, ECN 123 or 125, GEG 101, PSC 113, PSY 113, SOC 100 or 102 are acceptable. Students must also take a methodology course, HSS 320 (3 credits) or, in exceptional cases, this may be substituted with one of the following: APG 402, EST 220, HIS 395,

GEG 421, PSY 300, or SOC 301. In addition to this course and the core courses, students must take a total of 15 credits in an area of emphasis appropriate to their degree goals. Participating departments and programs are listed below.

Psychology  
Political Science  
Sociology, Anthropology and Social Welfare  
Geography  
History  
Economics  
Speech  
Computer Science  
Journalism  
Languages (Portuguese, Spanish, French)  
Community Planning  
Marine Affairs  
Women's Studies  
Afro-American Studies  
Urban Affairs  
Human Science and Services  
Human Development, Counseling and Family Studies  
Health<sup>2</sup>  
Nursing<sup>2</sup>  
Food Science and Nutrition<sup>2</sup>  
Education<sup>2</sup>  
Consumer Studies<sup>2</sup>  
Management<sup>2</sup>  
Marketing<sup>2</sup>  
Business Law<sup>2</sup>  
Business Communications<sup>2</sup>

Up to 9 credits may be taken in the University Year for Action program. The fourth requirement of the major is the major seminar, BGS 397 (3 credits), to be taken near the end of the program.

**Electives.** (27 credits) The electives permit students to complete the B.G.S. degree in a number of creative ways, either through carefully designed work experience internships, or previous but relevant educational experience, or both. Or students may choose to take courses to fulfill this requirement. BGS 390, 391, and 392 may be counted as electives if they are not used to fulfill General Education requirements.

**B.G.S. Senior Seminars.** Upon completion of at least 40 credits, a student may begin to take the sequence of three

<sup>2</sup>In these departments only certain courses are appropriate for the human studies major. Refer to an adviser for details.



required 6-credit senior seminars (BGS 390, 391, 392). The senior seminars may be applied either to the General Education requirement or to the elective requirement of the B.G.S. program.

**Senior Project.** (3 credits) All B.G.S. students must complete the BGS 399 Senior Project or a departmental directed study approved by the B.G.S. coordinator and an appropriate faculty adviser.

A total of 118 credits is required for the Bachelor of General Studies Degree.

## Fees and Finances

Charges and fees set forth in this listing are subject to change without notice. All charges are payable by the semester and are due at the time of registration. Checks or money orders should be made payable to the University of Rhode Island. For financial assistance, refer to "Financial Aid" in this section.

**Tuition and Fees.** Registration fee is \$10, payable once each semester. The tuition for in-state students is \$58 per undergraduate credit and \$81 per graduate credit. The out-of-state student tuition is \$133 per undergraduate credit and \$164 per graduate credit.

**Refund Policy.** If a course is officially dropped before the first class meeting, a full refund of tuition will be authorized. After classes have begun, the following refund schedule applies:

<i>Fall/Spring Semester</i>	<i>Refund</i>
During first week	80%
During second week	60%
During third week	40%
During fourth week	20%
After fourth week	No refund
<i>Summer Session</i>	
Before second class	60%
Before third class	20%
After third class	No refund

The registration fee is refundable only when a course is cancelled or closed by the University. There is no charge for adding a course to replace one dropped or cancelled.

**Financial Aid.** Only matriculated students enrolled on at least a half-time basis (6 credits) may be considered for an award. The Student Financial Aid Office determines eligibility for all

grants, loans, and employment, which are awarded on an academic year basis. Financial aid will be awarded only after a student has applied for a Pell Grant and has submitted a Pell Student Eligibility Report to the Student Financial Aid Office. For more detailed information, contact a peer counselor.

## Student Services

The College of Continuing Education provides a number of services for students in Providence and the community centers. Among these are free academic advising, peer counseling, health education, campus ministry and, at minimal cost, a testing service. Advisers are available to answer questions about registration, admissions, degree programs, and the College Level Examination Program. The peer counseling service provides students the opportunity to meet with other adult students who have been trained to help them with problem solving, including issues of minority groups and of the handicapped. In testing services, a staff of certified psychologists administers a number of psychological tests and evaluations to individuals and groups to help them make personal or career decisions.

The college also has at its Providence location a bookstore, library, nursery school, plus a comfortable student center where students and faculty can meet, talk, and relax.

## Registration and Admission

Enrollment in University courses offered by the College of Continuing Education is accomplished by completing a registration form prior to the beginning of each semester. Being enrolled in a course is not the same as being admitted to the University. To apply for admission to an undergraduate degree program a student must follow the application procedure stated below. However, credits earned through successful completion of courses may eventually be applied toward a degree program upon a student's acceptance as a degree candidate.

Beginning students who have been away from school for some time and have little or no coursework beyond high school are encouraged to register

in one of the special entry courses. These are BGS 100, the Pro-Seminar, and WRT 123, College Writing for Returning Students.

Any adult may enroll as a non-matriculated student in the College of Continuing Education. All courses at the University are open to non-matriculated students; however, day courses at the Kingston campus are open only on a space available basis.

All information and forms necessary for registration are included in the semester course list printed two to three weeks before each term begins. The lists, containing up-to-date course offerings and fees, are available during the registration periods, or they may be obtained through written or telephoned request.

**Application Procedures.** A student wishing to enroll in an undergraduate degree program in the College of Continuing Education does so through the Academic Programs Office. An initial interview is recommended so that program options may be explored as well as the student's capabilities. A student then files an Application for an Undergraduate Degree and provides the Academic Programs Office with official transcripts.

Students admitted to undergraduate degree programs should consult with the appropriate faculty coordinator concerning their major. A worksheet of courses is prepared and maintained as a checklist toward graduation requirements. It is the strict responsibility of the student to file an Intention to Graduate form with the Academic Programs Office three semesters in advance of the contemplated date.

# College of Engineering

Hermann Viets, Dean  
Robert H. Goff, Associate Dean

The College of Engineering offers undergraduate majors in chemical, chemical and ocean, civil, computer electronics, electrical, industrial, and mechanical engineering. In addition, ocean options are available in civil and in mechanical engineering. Because the same fundamental concepts underlie all branches of engineering, the freshman year courses are quite similar for all curriculums, and the choice of a specific branch of engineering may be delayed until the beginning of either the second term, or the second year of study. Students electing one of the programs that include ocean engineering follow the curriculums for chemical, civil, or mechanical engineering for two or three years and enroll in many ocean engineering courses in the junior and senior year.

All of the engineering curriculums are based on an intense study of mathematics and the basic sciences, and of the engineering sciences common to all branches of the profession. On this base is built the in-depth study of the important principles and concepts of each separate discipline. These principles are applied to the understanding and solution of problems of current interest and importance in the field. Each curriculum is designed to provide the knowledge and ability necessary for practice as a professional engineer, or for successful graduate study, which may include law, business administration or medicine as well as the normal engineering and science disciplines.



The goal of the college is to stimulate the students to become creative, responsible engineers, aware of the social implications of their work, and flexible enough to adjust to the rapid changes taking place in all branches of engineering. Engineers from all fields are heavily involved in the solution of technological and socio-technological problems. The needs of industry are for balanced teams of both men and women from the different engineering areas.

Engineering students, in common with all students in the University, must meet the University's General Education requirements listed on page 8 of this catalog. In these courses students are exposed to and challenged by concepts from the humanities and social sciences to insure that the social relevance of their engineering activities will never be forgotten. In selecting courses to satisfy these requirements, students should consult with their advisers to be certain that they have chosen courses which satisfy both the University requirements and the requirements of the Accreditation Board for Engineering and Technology. The requirements in mathematics and natural sciences are satisfied by required courses in the engineering curriculums. Three credits must be taken in the Foreign Language and Culture group, and six credits each in English Communications, Fine Arts & Literature, Social Sciences, and Letters. In two of the latter three groups, both courses must be taken in the same

department. The second course may not be at the 100 level, unless it has the first course as a prerequisite or is an obvious continuation of the first.

Entering students who have chosen a specific major should follow the particular program listed below. Those who have decided to major in engineering, but have not selected a specific program, should select courses in general chemistry, General Education electives, MTH 141, 142; EGR 102; MCE 162 and/or PHY 213 and 285.

Students who are undecided about engineering, but who wish to keep it open as an option, should take note that MTH 141 and 142, MCE 162 or PHY 213 and 285, and a course in chemistry, are required for graduation from the College of Engineering, and are prerequisites for many engineering courses. They normally must be taken at an early stage, preferably before transferring from University College to the College of Engineering. Students who have not taken them before entering the College of Engineering must confer with an engineering adviser to work out a program for completing all degree requirements. In such cases completion of graduation requirements may take somewhat more than normal time.

To transfer from University College to the College of Engineering, students must not only have completed 24 credits with a grade point average of 2.0 or better, they must also have completed all of the required mathematics, science, and engineering courses of the

freshman year with a grade point average of 2.0 or better.

To meet graduation requirements students enrolled in the College of Engineering must satisfactorily complete all courses of the curriculum in which they are registered and must obtain a grade point average of 2.0 or better in all required science, mathematics, and engineering courses (including professional electives).

**Freshman Year.** All engineering curriculums have similar programs during the freshman year. This provides some degree of flexibility to those students who are uncertain about their choice of curriculum. Except for the Chemical and the Chemical and Ocean Engineering majors, all engineering students take the following 17-credit program in the first semester.

- 3 CHM 101 Gen. Chemistry I
- 1 CHM 102 Lab. for CHM 101
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. to Calc. with Anal. Geometry
- 3 ECN 125 Economic Principles<sup>1</sup>
- 3 CSC 201 Introd. to Computing<sup>1</sup>
- 3 General education elective

Students who are still undecided about their choice of major after completing the first semester should review their choice of courses for the second semester with their adviser to be certain that they meet the prerequisites for the sophomore year.

**Accreditation.** The curriculums in chemical, civil, electrical, industrial and mechanical engineering are currently accredited by the Accreditation Board for Engineering and Technology (ABET).

## Biomedical Electronics Engineering

Because of severe staffing problems, the undergraduate program in biomedical electronics engineering is temporarily suspended, effective June 1984. No new students are being accepted

into the program. When sufficient facilities and staff are available to meet student demands, the program will be recalled to active status.

The Bachelor of Science (B.S.) degree in biomedical electronics engineering is offered by the Department of Electrical Engineering. Specialization in biomedical engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering. See the *Graduate School Bulletin*.

Biomedical engineers design medical instruments such as electrocardiographs, electroencephalographs, blood analyzers and X-ray machines for diagnosis of disease, equipment such as radiotherapy machines, pacemakers and lasers for surgery, and develop artificial organs for prosthesis. They design computer systems to help physicians monitor critically ill patients, to correlate a multitude of disease symptoms in order to diagnose a disease, and to determine the best course of treatment.

Biomedical engineers are employed in (1) the medical instrument industry, where they design, manufacture, sell and service medical equipment; (2) hospitals, which employ engineers in increasing numbers to select, evaluate and maintain complex medical equipment and to train the hospital staff in their use, and (3) medical and biological research centers, which use the specialized training of the biomedical engineer to apply engineering techniques in research projects.

The biomedical electronics engineering program combines study in the biological sciences with those areas of engineering which are particularly important for the application of modern technology to medicine. With a few minor elective changes the program also satisfies the entrance requirements of most medical schools, but students who plan to go on to medical school should consult the premedical adviser and the coordinator of the biomedical electronics engineering program.

For transfer from the University College to the College of Engineering in the Biomedical Electronics Engineering program students must have completed all science, mathematics, and engineering courses required during the first two semesters (see below) with grade average of C or better.

The major requires 138 credits.

### Freshman Year

First semester: 17 credits

- 3 CHM 101 Gen. Chemistry I
- 1 CHM 102 Lab. for CHM 101
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. to Calculus with Anal. Geometry
- 3 ECN 125 Economic Principles
- 3 CSC 201 Introd. to Computing
- 3 Gen. educ. elective

### Freshman Year

Second semester: 18 credits

- 4 CHM 124 Organic Chemistry
- 3 MTH 142 Intermed. Calc. with Anal. Geometry
- 3 PHY 213 Elementary Physics
- 1 PHY 285 Lab. for PHY 213
- 4 ZOO 111 Gen. Zoology
- 3 Gen. educ. elective

### Sophomore Year

First semester: 16 credits

- 3 ELE 211 Linear Systems and Circuit Theory I
- 3 ELE 210 Introd. to Elec. & Magnetism
- 1 ELE 214 Lab. for ELE 211
- 3 MTH 243 Calc. & Anal. Geometry
- 3 ZOO 345 Basic Animal Physiology
- 3 Gen. educ. elective

### Sophomore Year

Second semester: 18 credits

- 3 ELE 205 Microprocessor Lab.
- 3 ELE 212 Linear Systems and Circuit Theory II
- 3 MCE 263 Dynamics
- 3 MTH 362 Adv. Engineering Math I
- 3 PHY 223 Introd. to Acoustics & Optics
- 3 Gen. educ. elective

### Junior Year

First semester: 19 credits

- 4 ELE 313 Linear Systems
- 3 ELE 322 Electromagnetic Fields I
- 3 MTH 363 Adv. Engineering Math II
- 3 PHY 341 Introd. to Modern Physics
- 6 Gen. educ. electives

### Junior Year

Second semester: 16 credits

- 3 ELE 314 Linear Systems and Signals
- 3 ELE 323 Electromagnetic Fields II
- 4 ELE 342 Electronics I
- 3 PHY 420 Introd. to Thermodynamics & Stat. Mechanics (preferred) or MCE 341 Fundamentals of Thermodynamics

<sup>1</sup>Either or both of these courses may be taken during the second semester of the freshman year. Students who do so should replace them in the first semester with electives from the second semester of their program.

**Senior Year**

First semester: 18 credits

- 5 ELE 443 Electronics II
- 3 ELE 586 Biomedical Electronics I or  
ELE 588 Biomedical Engineering I
- 1 ELE 481 Biomedical Engineering  
Seminar
- 3 Gen. educ. elective
- 3 Math elective
- 3 Professional elective

**Senior Year**

Second semester: 16 credits

- 3 ELE 587 Biomedical Electronics II or  
ELE 589 Biomedical Engineering II
- 1 ELE 482 Biomedical Engineering  
Seminar
- 3 ZOO 442 Mammalian Physiology
- 6 Professional electives<sup>2</sup>
- 3 Free elective

**Chemical Engineering**

The Department of Chemical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in chemical engineering that is accredited by ABET<sup>3</sup>. A curriculum leading to the Bachelor of Science degree in chemical and ocean engineering (unaccredited) is offered in cooperation with the Department of Ocean Engineering (see page 61). The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees, also offered by the department, are described in the Graduate School Bulletin.

**Faculty:** Professor Rockett, acting chairperson. Professors Barnett, Estrin, Knickle, Rose, and Shilling; Assistant Professors Brown, Bose, Gray, and Gregory; Adjunct Associate Professor DiMeglio.

The chemical engineer is concerned with the application and control of processes leading to changes in composition. These may be chemical and physical processes, and control refers to achieving the desired goal at reasonable cost. The processes are most frequently associated with the production of useful products (chemicals, fuels, metals, foods, pharmaceuticals, paper, plastics, and the like), but also include such seemingly unrelated matters as removal of toxic components from the blood by an artificial kidney, and modeling the flow of exhaust gases from automobiles on the highway (turbulent diffusion and heat transfer coupled with chemical change). The chemical engineer's

domain includes more efficient production and use of energy, processing of wastes, and protection of the environment.

Chemical engineers have a strong foundation in chemistry, physics, mathematics and basic engineering. Chemical engineering courses include the use of digital computers, thermodynamics, transport phenomena, mass transfer operations, metallurgy, materials engineering, process dynamics and control, kinetics, and plant design. The student has the opportunity to operate small-scale equipment to determine efficiencies and operating characteristics, and to visit chemical plants in the area. Intensive work in the solution of complex problems is given in which economics and optimization of engineering design are emphasized.

A chemical engineer with a background in both chemistry and engineering can apply his knowledge of research and development, design, production, and manufacturing not only to the areas listed earlier, but to many others such as textiles, dyes, petroleum, ceramics, paint, and rubber, as well as to biomedical, biochemical, ocean, space, nuclear energy, and environmental problems and processes.

The senior year curriculum for students majoring in chemical and ocean engineering is listed under Ocean Engineering, page 61.

Programs can be designed for those interested in special areas such as material sciences, biochemical engineering, and pollution control, and in general chemical engineering. Programs for those interested in entering dental and medical schools, or schools of business administration, can also be constructed, sometimes requiring a few courses beyond the 130 regular credits.

The major requires 130 credits.

**Freshman Year<sup>4</sup>**

First semester: 15 credits

- 5 CHM 191 Gen. Chemistry<sup>4</sup>
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. Calc. with Anal. Geometry
- 6 Gen. educ. electives<sup>5</sup>

**Freshman Year**

Second semester: 15 credits

- 5 CHM 192 Gen. Chemistry<sup>4</sup>
- 3 MTH 142 Intermed. Calc. with Anal. Geometry
- 4 PHY 213 Elem. Physics and PHY 285 Physics Lab

**3 ECN 125 Elements of Economics****Sophomore Year**

First semester: 17 credits

- 3 CHE 212 Chemical Process Calculations
- 4 CHM 291 Organic Chemistry
- 3 MTH 243 Calc. and Anal. Geometry of Several Variables
- 4 PHY 214 Elem. Physics and PHY 286 Physics Lab
- 3 Gen. educ. elective<sup>5</sup>

**Sophomore Year**

Second semester: 16 credits

- 3 CHE 272 Introd. to Chemical Engineering
- 3 CHE 332 Physical Metallurgy or approved professional elective<sup>5</sup>
- 4 CHM 292 Organic Chemistry
- 3 ELE 220 Passive and Active Circuits
- 3 MTH 244 Differential Equations

**Junior Year**

First semester: 17 credits

- 3 CHE 313 Chem. Engineering Thermodynamics
- 3 CHE 347 Transfer Operations I
- 2 CHM 335 Phys. Chemistry Lab.
- 3 CHM 431 Physical Chemistry
- 3 Approved mathematics elective<sup>5</sup>
- 3 Gen. educ. elective<sup>5</sup>

**Junior Year**

Second semester: 16 credits

- 3 CHE 314 Chem. Engineering Thermodynamics
- 1 CHE 322 Chem. Process Analysis
- 3 CHE 348 Transfer Operations II
- 3 CHE 425 Process Dynamics and Control
- 3 CHM 432 Physical Chemistry
- 3 Gen. educ. elective<sup>5</sup>

<sup>2</sup>Select from approved list (see adviser). Professional electives approved for this program in the first semester include BCP 311, 403, 435; CHM 335, 431; CSC 311; ELE 331, 457, 581; MCE 354; MTH 244, 471; ZOO 441; in the second semester BCP 302; CHM 336, 432; CSC 311, 400; ELE 436, 444, 458, 484, 581; MCE 354; MTH 244, 472.

<sup>3</sup>Accreditation Board for Engineering and Technology through its Engineering Accreditation Commission in cooperation with the Committee on Education and Accreditation of the American Institute of Chemical Engineers.

<sup>4</sup>For CHM 191 and 192 (10 credits), students may substitute CHM 101, 102, 112, 114, and 212 (12 credits).

<sup>5</sup>In order to meet accreditation requirements, these courses, together with at least 18 credits of the general education electives, must be chosen from a group approved by the department, with the approval of the adviser designated by the department.



**Senior Year****First semester: 17 credits**

- 1 CHE 328 Industrial Plants
- 2 CHE 345 Chem. Engineering Lab.
- 2 CHE 349 Transfer Operations III
- 3 CHE 351 Plant Design and Economics
- 3 CHE 464 Industrial Reaction Kinetics
- 3 NUE 581 Introd. to Nuclear Engineering, **or** PHY 341 Introd. to Modern Physics
- 3 Gen. educ. elective<sup>5</sup>

**Senior Year****Second semester: 17 credits**

- 2 CHE 346 Chem. Engineering Lab.
- 3 CHE 352 Plant Design and Economics
- 3 Approved professional elective<sup>5</sup>
- 3 CVE 220 Mechanics of Materials **or** approved professional elective<sup>5</sup>
- 6 Gen. educ. electives<sup>5</sup>

## Civil and Environmental Engineering

The Department of Civil and Environmental Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in civil engineering and, in co-operation with the Department of Ocean Engineering, a curriculum leading to the Bachelor of Science (B.S.) degree in Civil Engineering with an ocean option. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees, also offered by the department, are described in the Graduate School Bulletin.

The Bachelor of Science program in Civil Engineering is accredited by the Accreditation Board for Engineering and Technology.

**Faculty:** Professor Kovacs, chairperson. Professors McEwen, Nacci, Poon, and Silva; Associate Professor Marcus; Assistant Professors Al-Kazily, Chang, Faruque, Karamanlides, Thiem, and Wright.

Civil engineers are responsible for researching, developing, planning, designing, constructing, and managing many of the complex systems and facilities which are essential to our modern civilization. These include: water supply and pollution control systems; all types of transportation systems from pipelines to city streets; structural

systems from residential buildings to city skyscrapers, power plants, and offshore platforms. Civil and environmental engineers play important roles in planning and administration with government agencies at all levels, especially those dealing with public works, transportation, environmental control, water supply, and energy.

The curriculum provides the students with sufficient background to pursue graduate study or to enter directly into professional practice in industry or government after graduation. The first two years are devoted largely to courses in mathematics, chemistry, physics, and engineering science which are common to all engineering curriculums. In their last two years students have a large degree of flexibility in developing their own programs to meet their own professional goals through the selection of professional electives in environmental engineering, soil mechanics and foundations, structural engineering, and transportation and construction.

No later than the first midsemester of the junior year each student is required to file a proposed plan of study which has been approved by the faculty adviser and the department. Professional electives and general education electives must be selected in consultation with the adviser to satisfy the Accreditation Board for Engineering and Technology accreditation requirements.

Total credits required: 131.

**Freshman Year****First semester: 17 or 18 credits**

- 3 CHM 101 Gen. Chemistry
- 1 CHM 102 Chemistry Lab.
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. Calc. with Anal. Geometry
- 3 CSC 201 Introd. to Computing I
- 3 ECN 125 Economic Principles
- 3 Gen. educ. elective **or**
- 4 GEL 103 Physical Geology **and** GEL 106 Geol. Lab.

**Freshman Year****Second semester: 16 or 17 credits**

- 3 MTH 142 Intermed. Calc. with Anal. Geometry
- 3 MCE 162 Statics
- 3 PHY 213 Elementary Physics
- 1 PHY 285 Physics Lab.
- 3 Gen. educ. elective **or**
- 4 GEL 105 Geol. Earth Sciences **and** GEL 106 Geol. Lab.
- 3 Gen. educ. elective

**Sophomore Year****First semester: 16 credits**

- 3 MTH 243 Calc. and Anal. Geometry
- 3 MCE 263 Dynamics
- 3 PHY 214 Elementary Physics
- 1 PHY 286 Physics Lab.
- 3 CVE 216 Metronics
- 3 Gen. educ. elective

**Sophomore Year****Second semester: 15 credits**

- 3 MTH 244 Differential Equations
- 3 CVE 220 Mechanics of Materials
- 3 ELE 220 Passive and Active Circuits
- 6 Gen. educ. electives

**Junior Year****First semester: 16 or 17 credits**

- 3 CVE 322 Civil. Engr. Lab. **or**
- 3 gen. educ. elective<sup>6</sup>
- 3 MCE 354 Fluid Mechanics
- 3 CVE 352 Structural Anal. and Design I
- 4 CVE 374 Environmental Engr. II
- 4 CVE 481 Geotechnical Engr. **or** CVE 347 Highway Engr.

**Junior Year****Second semester: 16 or 17 credits**

- 2 CVE 322 Civil Engr. Lab **or**
- 3 Gen. educ. elective<sup>6</sup>
- 4 CVE 381 Geotechnical Engr.
- 4 CVE 347 Highway Engineering **or** CVE 481 Geotechnical Engr.
- 3 CVE 353 Structural Anal. and Design II
- 3 CVE 370 Hydraulic Engr.
- 3 Gen. educ. elective
- 1 CVE 304 Introd. to Professional Practice

**Senior Year****First semester: 19 credits**

- 3 Approved math elective<sup>7</sup>
- 3 Free elective
- 3 CVE 495 Civil Engr. Systems **or** prof. elective
- 3 CVE 465 Analysis and Design of Concrete Structures
- 6 Professional electives
- 1 CVE 305 Introd. to Professional Practice

<sup>5</sup>In order to meet accreditation requirements, these courses, together with at least 18 credits of the general education electives, must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

<sup>6</sup>Students can take the lab in either the fall or spring semester.

<sup>7</sup>200 level or above course in mathematics. Course must be approved by adviser.

**Senior Year**

Second semester: 15 credits

- 6 Professional electives
- 3 CVE 495 Civil Eng. Systems or professional elective
- 3 Gen. educ. elective
- 3 Approved statistics elective
- 3 Approved science elective\*

Professional electives. Twelve of the fifteen required professional electives credits must be in the Civil and Environmental Engineering Department and must include at least 5 design credits. A list of courses and their design credits is available in the Civil and Environmental Engineering Department.

**Computer Electronics Engineering**

The Bachelor of Science (B.S.) degree in computer electronics engineering is offered by the Department of Electrical Engineering. Specialization in computer engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering, described in the Graduate School Bulletin.

Faculty: Professors Jackson and Tufts, coordinators. Electrical engineering faculty.

Due to limited facilities and staff, transfers from University College to the undergraduate programs in Computer Electronics Engineering and Electrical Engineering will be limited to a total of 90.

Applications for transfer to the College of Engineering will be considered in June for students who wish to be admitted for the following fall semester. Students must complete transfer applications in University College and submit them to the Associate Dean of Engineering by May 1. Admissions will be considered by the Associate Dean, in consultation with the Undergraduate Affairs Committee in Electrical Engineering. Admission decisions will be based on cumulative quality point averages in MTH 141, 142; PHY 213, 285; CHM 101, and CSC 201. Students with quality point averages of less than 2.5 in these courses are advised that there is little chance for admission to Electrical Engineering or Computer Electronics Engineering.

The Department of Electrical Engineering will no longer admit students into its sophomore courses

who have not been formally admitted into Electrical Engineering or Computer Electronics Engineering.

Computers and computer-like devices have transformed society, particularly in the technologically advanced countries. Computers are usually associated with data processing and high technology control and signal processing functions such as numerical controlled machine tooling, computer-aided machine design, tomography and medical imaging, speech analysis and synthesis, and picture and data communication. Both mini- and microcomputers now play an important role in our everyday work and play environment. Word processing, paperless offices, and microprocessor-controlled games are prominent examples.

Computer engineering is concerned with the design and efficient use of large or small computers and the development of other machines and instruments which contain computers, or parts of computers, as essential building blocks, from the hand-held calculator to the large multi-terminal computer, and the programmable assembly machine. A programmable machine is one which will change its operation in response to a program or command.

Computer engineers may be employed in the design, service, operation, and sale of computer systems as well as the design, service and sale of complex machinery, instruments, and systems — such as an automated subway — which require computers as essential parts. The employers may be industrial organizations, transportation companies, federal laboratories, or local government.

The computer engineer must understand the fundamentals of computer logic and programming as well as the fundamentals of electronics and general engineering — mathematics, mechanics, electricity, magnetism, and heat transfer. Engineers use all of this knowledge to create new devices and systems which satisfy perceived human needs.

For transfer from the University College to the College of Engineering in the Computer Engineering program students must have completed all science, mathematics, and engineering courses required during the first two semesters (see below) with a grade average of C or better.

The major requires 129 credits.

**Freshman Year**

First semester: 17 credits

- 3 CSC 201 Intro. to Computing I
- 3 CHM 101 Gen. Chem. Lecture I
- 1 CHM 102 Lab. for Chemistry I
- 3 MTH 141 Intro. Calc. with Anal. Geometry
- 3 ECN 125 Economic Principles
- 1 EGR 102 Basic Graphics
- 3 Elective

**Freshman Year**

Second semester: 16 credits

- 3 PHY 213 Elem. Physics I
- 1 PHY 285 Lab. for Physics I
- 3 MTH 142 Intermed. Calc. with Anal. Geometry
- 3 CSC 202 Intro. to Computing II
- 6 Electives

**Sophomore Year**

First semester: 16 credits

- 3 ELE 211 Linear Systems and Circuit Theory II
- 3 ELE 210 Intro. to Elec. and Magnetism
- 1 ELE 214 Intro. Elec. Engineering Lab.
- 3 MTH 243 Calculus and Anal. Geometry
- 6 Electives

**Sophomore Year**

Second semester: 15 credits

- 3 ELE 205 Microprocessor Lab.
- 3 ELE 212 Linear Systems and Circuit Theory II
- 3 MTH 362 Adv. Engr. Math. I
- 3 PHY 341 Modern Physics I
- 3 CSC 311 Machine & Assem. Lang. Programming

**Junior Year**

First semester: 16 credits

- 4 ELE 313 Linear Systems
- 3 ELE 322 Electromag. Fields I
- 3 ELE 331 Elec. Engr. Materials
- 3 MTH 363 Adv. Engineering Math. II
- 3 Elective

**Junior Year**

Second semester: 16 credits

- 3 ELE 314 Linear Systems and Signals
- 4 ELE 342 Electronics I
- 9 Electives

\*Any course for which the prerequisite is met by CHM 101, GEL 103, or PHY 214 or any course in biochemistry and biophysics, biology, botany, microbiology, or zoology. Course must be approved by adviser.

**Senior Year**

First semester: 17 credits

- 5 ELE 443 Electronics II
- 6 Professional electives
- 3 IDE 411 Engr. Statistics I
- 3 MTH elective

**Senior Year**

Second semester: 16 credits

- 3 ELE 405 Digital Computer Design
- 4 ELE 444 Electronics III
- 3 Professional elective
- 6 Electives

Senior year professional electives are any courses at the 400-500 level in engineering, mathematics, or computer science.

For requirements in humanities and social sciences see "Minimum Requirements" under Electrical Engineering below. In addition, the electronic computer engineering program has 6 credits of free electives.

**Electrical Engineering**

The Department of Electrical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees offered by the department are described in the *Graduate School Bulletin*.

**Faculty:** Professor Scharf, chairperson. Professors Daly, Haas, Jackson, Kelley, Lengyel, Lindgren, Mardix, Mitra, Polk, Sadasiv, Spence, and Tufts; Associate Professors Kay and Prince; Assistant Professors Boudreaux-Bartels, Cohen, Kumaresan, and Vaccaro; Adjunct Professors Biberman, Karlson, and Hall; Adjunct Associate Professor Banerjee; Adjunct Assistant Professors Cooper, McCollough, Most, Pridham, and Williams.

Due to limited facilities and staff, transfers from University College to the undergraduate programs in Computer Electronics Engineering and Electrical Engineering will be limited to a total of 90.

Applications for transfer to the College of Engineering will be considered in June for students who wish to be admitted for the following fall semester. Students must complete transfer applications in University College and submit them to the Associate Dean of Engineering by May 1. Admissions will be considered by the

Associate Dean, in consultation with the Undergraduate Affairs Committee in Electrical Engineering. Admission decisions will be based on cumulative quality point averages in MTH 141, 142; PHY 213, 285; CHM 101, and CSC 201. Students with quality point averages of less than 2.5 in these courses are advised that there is little chance for admission to Electrical Engineering or Computer Electronics Engineering.

The Department of Electrical Engineering will no longer admit students into its sophomore courses who have not been formally admitted into Electrical Engineering or Computer Electronics Engineering.

Electrical engineers work in all areas in which electrical phenomena are involved. These areas include communication systems, computers, control systems, quantum electronics, microelectronics, electro-optics, electroacoustics, energy conversion, antennas and radio propagation, design of electronic devices, and bioengineering.

Since electrical instrumentation is at the heart of modern science and technology, electrical engineers are not only employed in the computer, electronics, communications, and power industries, but may also be found in such diverse enterprises as transportation, the chemical industry, large hospitals, medical schools, and government laboratories. By carefully selecting elective courses, the student should be able to enter any of these fields after graduation or be prepared for graduate study in engineering or physics.

The curriculum emphasizes the scientific basis of electrical engineering and the application of mathematical analysis to engineering problems. Work is required in network and systems theory, atomic physics and solid state, electromagnetic theory, and electronics. Creative use of scientific principles in problems of engineering design is stressed particularly in the senior year. Computer hardware and software development is a part of many electrical engineering courses.

Extensive laboratory work with electrical and optical devices serves to bridge the gap between mathematical analysis and the real world of "hardware." Separate undergraduate laboratories are available for electrical measurements, electronics, pulse and digital circuits, microprocessors, computer graphics, microwaves and quan-

tum electronics, optics, materials, energy conversion, and systems. Selected students participate in advanced projects including microelectronics, investigation of optical properties of solids, optical and radio propagation, acoustics, computers, robotics, and biological instrumentation.

Electrical engineering students should note that the four-year electrical engineering curriculum allows for three credits of completely free electives which do not have to satisfy any of the General Education requirements. Although the natural science requirement will be satisfied automatically by courses specified in the electrical engineering curriculum, it is recommended that students take some additional courses in mathematics or physics for which prerequisites have been satisfied.

For transfer from the University College to the College of Engineering in the Electrical Engineering program, students must have completed all science, mathematics, and engineering courses required during the first two semesters (see below) with a grade average of C or better.

**Minimum Requirements**

**Humanities, and Social Sciences.** (27 credits) The student will satisfy the University's General Education requirement as well as meet the requirements of the Accrediting Board for Engineering and Technology by completing 6 credits in Fine Arts and Literature, 6 credits in English Communication, 6 credits in Social Sciences, 6 credits in Letters, and 3 credits in Foreign Culture. In two of the three specific groups — Fine Arts and Literature, Social Sciences, and Letters — both courses chosen must be in the same major and must be selected from a list provided by the Electrical Engineering Department. ECN 125 required in the freshman year may be included as one of the social sciences.

**Mathematics.** (18 credits) MTH 141, 142, 243, 362, 363; 3 cr. MTH elective (200 level or higher).

**Basic Sciences.** (20 credits) CHM 101/102; basic science elective (any course in CHM, BIO, GEL, ESC, PHY or ZOO approved by the department), PHY 213, 285, 223, 341, thermodynamics (PHY 420 or MCE 341).

Computer Science. (3 credits) CSC 201.  
Engineering Sciences and Design. (53 credits) MCE 263; ELE 205, 210, 214, 211, 312, 313, 314, 322, 323, 331, 342, 443; two electrical engineering electives, one electrical engineering lab course, engineering elective (non-electrical).

Professional Elective. (3 credits)

Other Engineering Courses. (1 credit)  
EGR 102.

Free Elective. (3 credits)

The major requires 128-129 credits.

#### Freshman Year

First semester: 17 credits

- 3 CHM 101 Gen. Chemistry I
- 1 CHM 102 Lab.
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. Calc. with Anal. Geometry
- 3 ECN 125 Economic Principles
- 3 CSC 201 Introd. to Computing
- 3 One gen. educ. elective

#### Freshman Year

Second semester: 16 credits

- 3 Basic science elective<sup>9</sup>
- 3 MTH 142 Intermed. Calc. with Anal. Geometry
- 4 PHY 213 Elem. Physics I and 285 Physics Lab.
- 6 Two gen. educ. electives

#### Sophomore Year

First semester: 16 credits

- 3 MTH 243 Calc. and Anal. Geom. of Several Variables
- 3 ELE 210 Intrqd. to Electr. and Magnetism
- 3 PHY 223 Introd. to Acoustics and Optics
- 3 ELE 211 Linear Syst. and Circuit Theory I
- 1 ELE 214 Introd. EE Lab.
- 3 One gen. educ. elective

#### Sophomore Year

Second semester: 15 credits

- 3 MTH 362 Adv. Engr. Mathematics I
- 3 PHY 341 Modern Physics
- 3 ELE 212 Linear Syst. & Circuit Theory II
- 3 ELE 205 Microprocessor Lab.
- 3 MCE 263 Dynamics

#### Junior Year

First semester: 16 credits

- 3 MTH 363 Adv. Engr. Mathematics II
- 4 ELE 313 Linear Systems
- 3 ELE 322 Electromagnetic Fields I
- 3 ELE 331 Elec. Engr. Materials I
- 3 One gen. educ. elective

#### Junior Year

Second semester: 16 credits

- 3 PHY 420 Introd. to Thermodynamics or MCE 341 Thermodynamics
- 3 ELE 314 Linear Systems and Signals
- 3 ELE 323 Electromagnetic Fields II
- 4 ELE 342 Electronics I
- 3 One gen. educ. elective

#### Senior Year<sup>10</sup>

Total credits for 2 semesters: 32

- 5 ELE 443 Electronics II
- 6 Two ELE electives<sup>11</sup>
- 3-4 Electrical Lab. Course<sup>12</sup>
- 3 Professional elective<sup>13</sup>
- 3 Engineering elective<sup>14</sup>
- 3 Mathematics elective (200 level or above)
- 6 Two gen. educ. electives<sup>15</sup>
- 3 Free elective

Cooperative work in industry carrying academic credit (ELE 495, 496) is available for a few particularly talented and motivated students who are willing to devote more than average effort to their studies and who are capable of much better than average performance.

The Department of Electrical Engineering offers a five-year B.S.-M.S. cooperative program. Academic coursework is alternated between periods of engineering practice at companies or government laboratories selected by the department.

A total of 14 months of industrial experience is obtained in three segments: (1) 3 months, summer between sophomore and junior year; (2) 3 months, summer between junior and senior year: ELE 495 (3 credits); (3) 8 months, second semester of senior year plus the following summer: ELE 496 (6 credits).

The three assignments are usually, but not necessarily, taken at the same company. The industrial experience grows in technical complexity as the student progresses through the program, with the first industrial experience having a small technical content and the eight-month period at the end of the senior year being a junior engineering position. The student earns credit toward his or her degree for the work done and experience gained during the second and third assignments.

Students interested in this program should contact Dr. J.C. Daly, the department's cooperative work coordinator.

Students who are not in the cooperative B.S.-M.S. program may offer no

more than three credits of ELE 495 toward their B.S. degree requirements. It will be credited as a professional elective or as a free elective.

## Industrial Engineering

The Department of Industrial Engineering offers an ABET-accredited curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree also offered by the department is described in the *Graduate School Bulletin*.

Faculty: Associate Professor D.M. Shao, chairperson. Professors Nichols and James; Associate Professor Lawing; Assistant Professors Hsueh, and Radhakrishnan; Adjunct Associate Professors Olson, Sylvia, and Reynolds.

The industrial engineering curriculum is designed to provide significant strength in mathematics, basic science, and engineering science, plus a carefully coordinated set of courses of particular importance to the professional industrial engineer. Mathematical modeling of physical systems, optimization, probability and random variables, production systems, manufacturing engineering, computer aided manufacturing, and metrology are areas that receive considerable attention. The professional portion of the curriculum is augmented with computer science and professional electives. Computer applications are required throughout the curriculum.

Upon completion, the student will be amply prepared to pursue a career in the many engineering opportunities in

<sup>9</sup>Must be approved by department adviser.

<sup>10</sup>See your adviser for help in the preparation of suitable senior year programs.

<sup>11</sup>ELE electives must be at 400-500 level.

<sup>12</sup>ELE Lab courses are ELE 401, 427, 432, 444, and 458.

<sup>13</sup>Professional elective is any course at 300-500 level in engineering, computer science, natural science, or mathematics.

<sup>14</sup>Engineering electives are: MCE 323, 354, 448; CVE 220; IDE 404, 411, 412; CHE 332, 347, 437, and OCE 410.

<sup>15</sup>ECN 125 plus 24 credits of approved electives are required to satisfy General Education and ABET requirements.



industry, transportation, government, hospitals, and service organizations. The curriculum also provides an excellent background for further formal study in industrial engineering or related fields of engineering and physical science.

By using the professional and free electives for certain courses, the student can complete a Bachelor of Science degree in industrial engineering plus a Master of Business Administration degree within 5 years. See the department advisers for further details.

The major requires 134 credits.

#### Freshman Year

First semester: 17 credits

- 4 CHM 101, 102 Chem. Lecture and Lab.
- 1 EGR 102 Graphics
- 3 MTH 141 Calculus I
- 3 CSC 201 Computer Science
- 3 ECN 125 Economics
- 3 Gen. educ. elective

#### Freshman Year

Second semester: 16 credits

- 4 PHY 213, 285 Phys. Lecture and Lab.
- 3 MCE 162 Statics
- 3 MTH 142 Calculus II
- 6 Gen. educ. elective

#### Sophomore Year

First semester: 16 credits

- 3 ECN 126 Economics
- 3 MTH 243 Calculus III
- 3 MCE 263 Dynamics
- 4 PHY 214, 286 Phys. Lecture and Lab.
- 3 Gen. educ. elective

#### Sophomore Year

Second semester: 17 credits

- 3 IDE 220 Intro. to Industrial Engr. I
- 3 MTH 215 Linear Algebra
- 3 CVE 220 Mechanics of Materials
- 3 ACC 201 Accounting I
- 3 ELE 220 Circuits
- 2 IDE 240 Manufacturing Processes

#### Junior Year

First semester: 18 credits

- 3 IDE 411 Engr. Statistics I
- 3 IDE 432 Operations Research I
- 3 MCE 341 Thermodynamics
- 3 CHE 333 or 437 Materials. Engr.
- 3 MTH 361 Math. for Science and Engr.
- 3 IDE 320 Industrial Engr. II

#### Junior Year

Second semester: 17 credits

- 3 IDE 412 Engr. Statistics II
- 3 IDE 433 Operations Research II
- 3 MCE 354 Fluid Mechanics
- 2 IDE 441 Metal Casting
- 3 IDE 325 Computer Solution in Industrial Engr. Problems
- 3 Gen. educ. elective

#### Senior Year

First semester: 18 credits

- 3 IDE 350 Ind. Engr. Systems Design I
- 3 PHY 341 Modern Physics
- 3 IDE 442 Manufacturing Engineering
- 3 Prof. elective
- 3 Free elective
- 3 Gen. educ. elective

#### Senior Year

Second semester: 15 credits

- 3 IDE 351 Ind. Engr. Systems Design II
- 3 Quant. or Materials elective<sup>16</sup>
- 3 Prof. elective
- 3 Free elective
- 3 Gen. educ. elective

General education indicated in several places above refers to one of the electives in the University's General Education program, required in all curriculums leading to a bachelor's degree.

## Mechanical Engineering and Applied Mechanics

The Department of Mechanical Engineering and Applied Mechanics offers a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical engineering, which is accredited by the Accreditation Board for Engineering and Technology (ABET) and, in cooperation with the Department of Ocean Engineering, offers a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical engineering with ocean engineering option, which is also accredited by ABET. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees also offered by the department are described in the *Graduate School Bulletin*.

**Faculty:** Professor Kim, chairperson. Professors G. Brown, DeLuise, Dowdell, Ferrante, Goff, Hagist, Lessmann, Nash, Sadd, Test, Viets, M. Wilson, and F. White; Associate Professors Datseris, Driels, Faghri, Ghonem, Henderson, Palm, and Shulka; Assistant Professor Chase; Instructor Gominho; Adjunct

Professors Dunlap and Schenck; Adjunct Associate Professors Messier and Patton.

This curriculum provides a thorough and well-rounded foundation in basic science, mathematics, engineering science, and general education to prepare the graduate to enter a professional engineering career. The curriculum is also excellent preparation for graduate school. Mechanical engineers are employed in large numbers in every industry where they frequently assume positions of leadership. The program at the University of Rhode Island is unusually strong in providing a background in systems engineering, design, fluids, and the thermal sciences including energy and energy transfer. Computer applications are stressed throughout the curriculum. All undergraduates are invited to join the Student Section of the American Society of Mechanical Engineers which sponsors industrial plant visits, special lectures, and other activities.

The work in the first two years consists of basic courses in science (mathematics, physics, chemistry), applied science (mechanics, electricity and magnetism, computer science, theory of mechanisms), and general education (humanities, social sciences, communication).

The junior year concentrates on fundamental courses in mechanical engineering (thermodynamics, fluid mechanics, systems engineering, engineering analysis), materials science, engineering economy, and electronic devices. Further general education studies are also covered.

The senior year in mechanical engineering includes machine design, heat transfer, manufacturing processes, computer-aided design, and a wide variety of professional electives such as mechanical control systems, advanced fluid mechanics, advanced mechanics of materials, microprocessor applications, internal combustion engines, alternate energy systems including solar

<sup>16</sup>One course must be selected from the following list of courses:

IDE 500, 513, 514, 525, 533, 535, 540, 545, 550, 555; MTH 335, 362. Any 400-level MTH course except MTH 451, 452, 465.  
IDE 517, 541; ELE 331, 582; OCE 534; CHE 532, 533, 537, 539, 573; MCE 426, 550; PHY 455.





and wind energy, power plants, lubrication and bearings, thermal environmental engineering, vibrations, finite element method, and experimental stress analysis.

Throughout the program the student takes an integrated series of laboratory courses which introduce laboratory techniques and provide practical experience with the physical and engineering phenomena being covered in concurrent courses. Digital computer techniques are included. The Academic Computer Center's NAS 7000 mainframe and Prime 750 are used. Students also use the College of Engineering's VAX-11/780 and the department's microcomputers and computer graphics facilities.

To receive the Bachelor of Science degree in mechanical engineering, the student must satisfactorily complete all the courses in the following curriculum, although the sequence may be changed. The curriculum shown below is for the class of 1988 and subsequent classes. Students in the classes of 1985-87 should obtain a check sheet from their advisers.

The major for the classes of 1988 and subsequent classes requires 133 credits.

Those students desiring an undergraduate specialization in ocean engineering may choose the program in

mechanical and ocean engineering. Students enrolled in mechanical and ocean engineering must follow the program of study of mechanical engineering during the freshman and sophomore years. The junior and senior years' curriculum for this major is listed under Ocean Engineering. All students enrolled in the Mechanical Engineering curriculum must have credit for CSC 201, or the equivalent, before taking 200 or higher level MCE courses.

This curriculum totals 133 credits.

#### Freshman Year

First semester: 17 credits

- 4 CHM 101 Gen. Chemistry I and CHM 102 Lab.
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. Calc. with Anal. Geometry
- 3 ECN 125 Economic Principles
- 3 CSC 201 Introd. to Computing
- 3 Gen. educ. elective

#### Freshman Year

Second semester: 16 credits

- 3 MTH 142 Intermed. Calc. with Anal. Geometry
- 3 MCE 162 Statics
- 4 PHY 213, 285 Elem. Physics
- 6 Gen. educ. electives

#### Sophomore Year

First semester: 16 credits

- 3 CVE 220 Mechanics of Materials
- 3 MTH 243 Calc. and Anal. Geometry of Several Variables
- 3 MCE 263 Dynamics
- 4 PHY 214, 286 Elem. Physics
- 3 Gen. educ. elective

#### Sophomore Year

Second semester: 18 credits

- 3 ELE 220 Passive and Active Circuits
- 3 MTH 244 Differential Equations
- 3 MCE 324 Kinematics
- 3 PHY 341 Modern Physics
- 6 Gen. educ. electives

#### Junior Year

First semester: 15 credits

- 3 CHE 333 Engr. Materials
- 3 ELE 221 Electronic Instrum. and Electromech. Devices
- 3 MCE 341 Fundamentals of Thermodynamics
- 3 MCE 372 Engr. Analysis I
- 3 Gen. educ. elective

#### Junior Year

Second semester: 18 credits

- 3 MCE 317 Mechanical Engr. Exp. I
- 3 MCE 342 Mechanical Engr. Thermodynamics
- 3 MCE 354 Fluid Mechanics
- 3 MCE 366 Introd. to Systems Engineering
- 3 MCE 373 Engr. Analysis II
- 3 Gen. educ. elective

#### Senior Year

First semester: 18 credits

- 3 IDE 440 Manufacturing Processes
- 3 MCE 318 Mechanical Engr. Exp. II
- 3 MCE 423 Design of Machine Elements
- 3 MCE 448 Heat and Mass Transfer
- 6 Professional electives<sup>17</sup>

#### Senior Year

Second semester: 15 credits

- 3 MCE 429 Comprehensive Design
- 3 MCE 430 Computer Aided Design
- 6 Professional electives<sup>17</sup>
- 3 Free elective
- 3 Gen. educ. elective

<sup>17</sup>The requirement for professional electives must be satisfied by a minimum of three three-credit elective courses in mechanical engineering and the fourth course must be a 300-, 400-, or 500-course offered by the College of Engineering, or by the computer science, chemistry, or physics departments or a 400-, or 500-level course offered by the mathematics department.

## Ocean Engineering

The department of Chemical Engineering, the Department of Civil and Environmental Engineering, and the Department of Mechanical Engineering and Applied Mechanics offer curriculums leading to the Bachelor of Science (B.S.) degree in chemical and ocean engineering, civil engineering with ocean engineering option, or mechanical engineering with ocean engineering option in cooperation with the graduate Department of Ocean Engineering. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in ocean engineering are described in the Graduate School Bulletin.

*Faculty:* Professor Silva, chairperson. Professors Haas, Kowalski, LeBlanc, Middleton, Nacci, Rose, Spaulding, and White; Emeritus Professor Sheets.

### Chemical and Ocean Engineering.

Students enrolled in this curriculum will follow the program of study for chemical engineering (page 55) during the freshman, sophomore, and junior years.

The major requires 132 credits.

#### Senior Year

First semester: 18 credits

- 1 CHE 328 Industrial Plants
- 2 CHE 349 Transfer Operations III
- 3 CHE 351 Plant Design and Economics<sup>18</sup>
- 3 CHE 403 Introd. to Ocean Engr. Processes I
- 3 CHE 464 Industr. Reaction Kinetics
- 3 CHE 534 Corrosion and Corrosion Control
- 3 Gen. educ. elective<sup>19</sup>

#### Senior Year

Second semester: 18 credits

- 3 CHE 352 Plant Design and Economics<sup>18</sup>
- 3 CHE 404 Introd. to Ocean Engr. Processes II
- 3 OCG 401 Gen. Oceanography
- 3 OCE 410 Basic Ocean Measurements
- 6 Gen. educ. electives<sup>19</sup>

### Civil Engineering with Ocean

**Engineering Option.** Students enrolled in this curriculum will follow the program of study for civil engineering (page 56) during the freshman and sophomore years.

The curriculum requires 132 credits.

#### Junior Year

First semester: 19 or 20 credits

- 2 CVE 322 Civil Engineering Lab. or
- 3 Gen. educ. elective
- 3 MCE 354 Fluid Mechanics
- 3 CVE 352 Structural Analysis and Design I
- 3 CVE 374 Environmental Engr. I
- 3 OCG 401 General Oceanography
- 4 CVE 381 Geotechnical Engr. or CVE 347 Highway Engr.

#### Junior Year

Second semester: 16 or 17 credits

- 2 CVE 322 Civil Engr. Lab or
- 3 Gen. educ. elective
- 4 CVE 347 Highway Engr. or CVE 381 Geotechnical Engr.
- 3 CVE 353 Structural Analysis and Design II
- 3 CVE 370 Hydraulic Design
- 3 CVE/OCE 406 Introd. to Ocean and Coastal Engr.
- 1 CVE 304 Introd. to Professional Practice

#### Senior Year

First semester: 17 credits

- 3 Approved math. elective
- 3 Free elective
- 3 CVE 495 Civil Engr. Systems or prof. elective
- 3 CVE 465 Anal. and Design of Concr. Struct.
- 3 CVE/OCE 411 Basic Coastal Measurements
- 1 CVE 491 Special Problems: Project in Civil and Ocean Engr.
- 1 CVE 305 Introd. to Professional Practice

#### Senior Year

Second semester: 18 credits

- 3 CVE/OCE 407 Project in Ocean Engineering
- 3 Professional elective
- 3 CVE 495 Civil Engr. Systems or prof. elective
- 3 Approved statistics elective
- 3 Gen. educ. elective
- 3 Free elective
- 0 CVE 306 Introd. to Professional Practice

**Mechanical Engineering with Ocean Engineering Option.** Students enrolled in this curriculum will follow the program of study for mechanical engineering during the freshman and sophomore years. This curriculum requires 136 credits. The junior and

senior years for the class of 1989 and subsequent classes are shown below.

#### Junior Year

First semester: 15 credits

- 3 CHE 333 Engr. Materials
- 3 ELE 221 Electronic Instrum. and Electromech. Devices
- 3 MCE 341 Fundamentals of Thermodynamics
- 3 MCE 372 Engr. Analysis I
- 3 OCG 401 General Oceanography

#### Junior Year

Second semester: 18 credits

- 3 MCE 317 Mechanical Engr. Exp. I
- 3 MCE 342 Mechanical Engr. Thermodynamics
- 3 MCE 354 Fluid Mechanics
- 3 MCE 366 Introd. to Systems Engineering
- 3 MCE 373 Engr. Analysis II
- 3 Gen. educ. elective

#### Senior Year

First semester: 18 credits

- 3 IDE 440 Manufacturing Processes
- 3 MCE 401 Introd. to Ocean. Engr. Systems I
- 3 MCE 410 Basic Ocean Measurements
- 3 MCE 423 Design of Machine Elements
- 3 MCE 448 Heat and Mass Transfer
- 3 PHY 425 Acoustics

#### Senior Year

Second semester: 18 credits

- 3 MCE 402 Introd. to Ocean Engr. Systems II
- 3 MCE 429 Comprehensive Design
- 3 MCE 430 Computer Aided Design
- 3 Professional elective<sup>20</sup>
- 3 Free elective
- 3 Gen. educ. elective

<sup>18</sup>CHE 351, 352 will include applications to ocean engineering problems for students selecting the chemical and ocean engineering program.

<sup>19</sup>At least 18 credits of the General Education electives must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

<sup>20</sup>The requirement for professional elective must be satisfied by a three-credit elective course in mechanical engineering.

## College of Human Science and Services

Barbara Brittingham, Acting Dean  
Wm. Lynn McKinney, Assistant Dean  
M. Thelma Kenyon, Assistant Dean for  
Administration

The College of Human Science and Services is a people-oriented college that was designed to focus on the human and non-human resources needed to help individuals and groups solve human problems encountered in contemporary society. Programs in the college provide training for professionals to assess human problems and to develop the helping skills necessary for the effective delivery of human services to individuals and groups in need. These programs include both formal and informal experiences with people in a wide variety of public service settings and enable students to develop the competencies needed in the emerging field of human services.

The degrees currently offered by the college include: (1) a Bachelor of Science degree with majors in communicative disorders, consumer affairs, elementary and secondary education, human science and services, physical education, and textile marketing; (2) a Bachelor of Science degree in Home Economics with majors in human development and family studies; general home economics; home economics education; home economics in the urban environment; and textiles, fashion merchandising and design.

The college is currently composed of five departments and a Division of Interdisciplinary Studies.

The Institute of Human Science and Services, the research and service branch of the college, promotes these activities in human service areas across



all departments of the college. The institute carries on research in education and educational testing, lifelong learning, human transition, child development, communicative disorders, special populations, gerontology, and exercise physiology. Faculty who are involved in the research of the institute also teach within the various departments of the college.

The college sponsors a number of organizations and activities which provide special opportunities for students:

**URI Clearinghouse for Volunteers** is a service which matches prospective volunteers with positions in Rhode Island's human service agencies, giving students opportunities to explore career options and provide needed service.

**Human Performance Laboratory** is equipped with the latest means of measuring physical activity and its stresses and effects; has programs for adult fitness; research programs related to fitness, sport, and nutrition.

**Child Development Center** is a modern facility that provides programs of day care and pre-school; offers opportunities for undergraduate students to observe and learn to work with young children.

**Microcomputer Laboratory** contains a variety of up-to-date microcomputers; emphasis on software designed for use in elementary and secondary classrooms.

**Historic Costume and Textile Collection**, a teaching collection of over

12,000 items, emphasizes historic New England clothing and textile products. Items range from mummy wrappings to modern design collections.

**Speech and Hearing Clinic** supports over 2,000 client visits per year in the areas of speech and hearing assessment and therapy; provides observational, clinical, and research support for Communicative Disorders.

### Faculty

**Communicative Disorders Faculty:** Associate Professor Singer, chairperson. Professor Beaupre; Associate Professors Culatta, Grubman, and Hurley; Clinical Assistant Professor Regan; Clinical Coordinator of the Speech and Hearing Center, Finck.

**Education Faculty:** Professor Long, chairperson. Professors Bumpus, Croasdale, Heisler, P. Kelly, W. Kelly, McGuire, Pezzullo, Purnell, Russo, and Willis; Associate Professors Allen, Brittingham, Farstrup, Kellogg, McKinney, Nagel, Nelson, and Soderberg; Assistant Professors Boulmetis, O'Neill, Sandman, and Sullivan; Adjunct Professors Crafts, Hicks, Knott, and Tierney.

**Human Development, Counseling, and Family Studies Faculty:** Associate Professor Schaffran, chairperson. Professors Cohen, Fitzelle, Maynard, Spence, Rae, and Zweig; Associate Professors Blackman, Greene, Gunning, and Pascale; Assistant Professors Blood,

Christner, Clark, Cooper, Frank, Kohut, Kowalski, Noring, and Schroeder; Adjunct Professor Guthrie; Adjunct Assistant Professors Anderson and Mosher.

**Physical Education, Health and Recreation Faculty:** Associate Professor Polidoro, chairperson. Professors Massey, Nedwidek, and Sonstroem; Associate Professors Bloomquist, Cleg, Cohen, Crooker, DelSanto, Mandell, Manfredi, O'Donnell, O'Leary, Piez, Robinson, Seleen, Sherman, and Zarchen; Assistant Professors Henni and Norris; Special Instructors Marsden, McAniff, Mellor-Deslorieux, Rule and Vanner; Adjunct Associate Professors Lemaire and Robb.

**Textiles, Fashion Merchandising and Design Faculty:** Associate Professor Helms, chairperson. Associate Professors Higa and Weeden; Assistant Professors Risch, Scruggs, and Welters; Curator Kaye; Adjunct Assistant Professor Lundberg.

**Division of Interdisciplinary Studies Faculty:** Gerontology: Professor Spence, program head; General Home Economics: Assistant Professor Noring, program head; Consumer Affairs: Associate Professor Helms, program head; Human Science and Services: Associate Professor McKinney, program head; Urban Affairs: Assistant Professor Noring, program head; Special Populations: Associate Professor Crooker, program head.

## General Education Requirements

All students pursuing a bachelor's degree in the College of Human Science and Services are required to develop a 39-credit program in general education within the framework listed below. For a complete description of the General Education requirements see page 8.

Individual programs may require specific courses for their area.

**English Communication (6 credits)** A minimum of 3 credits in written communication from courses in Group Cw; a minimum of 3 credits in oral communication from courses in Group C approved for General Education.

**Fine Arts and Literature (6 credits)**

**Foreign Language and Culture (6 credits)**

**Letters (6 credits)**

**Mathematics (3 credits)**

**Natural Sciences (6 credits)**

**Social Sciences (6 credits)** A minimum of 3 credits from psychology, sociology, or anthropology courses approved for General Education.

Total: 39 credits.

## Division of Interdisciplinary Studies.

This division provides an environment in which faculty and students may bring together interdisciplinary programs and courses of study in human science and services. The division functions to promote and encourage the creation, implementation, and evaluation of interdisciplinary courses and programs of study taught by faculty from two or more departments within the University. In addition, the division assumes responsibility for the development, review, and implementation of programs of study which draw significantly on two or more human science and services departments. The division maintains administrative responsibility for the following programs: General Home Economics (see page 65); Home Economics in the Urban Environment (see page 68); Human Science and Services (see page 66); Consumer Affairs (below); Gerontology (see page 10); and Special Populations (see page 11).

**Minors: Interdisciplinary Non-Degree Programs.** Students may declare a minor which will appear on their transcripts as a category separate from their major. Credits may be drawn from any cohesive combination of courses. Minor may be defined as (1) the completion of 18 or more credits in any of the minors that have been proposed by one or more departments and approved by the Curriculum Affairs Committee, Faculty Senate, and President, (2) the completion of 18 or more credits within a curriculum other than the student's major, or (3) the completion of 18 or more credits of related studies offered by more than one department and approved by a member of the faculty competent in the area and the dean of the college. It is the responsibility of the student to declare and obtain approval for a minor no later than the end of the add period at the start of the senior year.

## Communicative Disorders

This curriculum leads to a Bachelor of Science (B.S.) degree in communicative disorders. In addition to General Education requirements and appropriate free electives, a major of 30 semester hours in communicative disorders includes 21 semester hours of required courses and 9 semester hours of professional electives.

The required courses are CMD 260, 261, 372, 373, 374, 375, and 376. The remaining 9 credit hours (three courses) must be selected from the four areas listed below with a limit of one course in a given area:

**Area A (0-3 credits).** Normal Human Development and Adjustment: HCF 200, 201, 450; PSY 232, 235.

**Area B (0-3 credits).** Special Populations: CMD 475; HCF 220; PSY 254, 442.

**Area C (0-3 credits).** Supportive Disciplines: EST 220; EDC 312, 424; HSS 320; LIN 201; PSY 300, 386; SPE 220.

**Area D (0-3 credits).** Honors Work, Individual Research or Special Problems within the Department: CMD 391, 392, 491, 492.

With careful early planning, majors may use free electives to achieve a double major or to explore special interest areas in depth. Students anticipating graduate study in speech-language pathology or audiology are encouraged to discuss admissions requirements and programs of study with this goal in mind. The curriculum is personalized for each student and closely supervised by the student's adviser.

A total of 120 credits is required for graduation.

## Consumer Affairs

This curriculum leads to the Bachelor of Science (B.S.) degree in consumer affairs. This interdisciplinary program within the Division of Interdisciplinary Studies provides a general background for students who wish to develop effective strategies for dealing with complex social and economic systems relating to consumer concerns. Coursework in consumer affairs is combined with selected courses in business, economics, political science and related areas. Field experience and internships are an integral part of the program.



Graduates with this degree may choose careers in consumer affairs in business, social service agencies, local or state government consumer protection agencies, Cooperative Extension Service, and consumer education.

The following courses are required of all students and may be taken to partially fulfill the General Education requirements: SPE 101, or 215; ECN 125, 126; PSC 113, 221; MTH 109, EST 408; CSC 201, MGS 207, or EST 412; PSY 113; SOC 100 or 102; SOC 204 or PSY 435; and, PHL 117, MKT 321, or MGT 380.

In addition, 30 credits of consumer affairs courses must be taken, of which the following are required: CNS 220, 320, 420; MKT 311; BSL 333; and a field experience (minimum of 3 credits of CNS 470 or MKT 491, 492). The other 12 credits must be selected from consumer-related courses selected in consultation with an adviser.

Students are also required to take 15 credits for professional electives. Selection should be made in consultation with a faculty member of the Consumer Affairs Advisory Committee.

A total of 128 credits is required for graduation.

## Education

The curriculums in elementary and secondary teacher education lead to the Bachelor of Science (B.S.) degree. The Master of Arts (M.A.) degree programs in education are described in the *Graduate School Bulletin*.

The curriculums offer a balanced program of academic preparation and professional training. The required professional courses contribute directly to understanding the teachers' role in society and to the development of teaching skills.

The following courses are required in the professional sequence for elementary education: EDC 102, 312, 371, 427 and 428 are taken prior to student teaching. EDC 484 and 485 comprise the student teaching semester, and EDC 424 is taken after student teaching. EDC (MUS) §29 is also strongly advised.

The following courses are required in the professional sequence for secondary education: EDC 102, 312, 371, and 430 are taken prior to student teaching. EDC 484 and 485 comprise the student teaching semester.

The following non-education courses are required of all students and may, where appropriate, be taken to partially fulfill the General Education requirements: elementary education – PSY 113, and PSY 232 or HCF 200; secondary education – PSY 113, and PSY 232 or HCF 310.

All students in the department will plan, in cooperation with an adviser, a second major of 27-30 credits. Depending upon the major chosen, this may or may not be declared a "double major." The second major of secondary education students must be in the area for which a teaching certificate is sought.

Students apply to the department from University College, and should consult with a University College education adviser as early as possible for further information since openings in the program are limited. After admission to the curriculum, all students must maintain an average of at least 2.2, and attain a grade of at least C in EDC 430, 427 and 428 to be eligible for student teaching. Failure to meet these two conditions will lead to automatic dismissal from the program.

A total of 120 credits is required for graduation.

## General Home Economics

The curriculum in general home economics leads to the Bachelor of Science (B.S.) degree in home economics. Interdisciplinary in nature, the program provides for academic work in all areas of home economics combined with a professional area of interest selected by the student. Professional areas of interest prepare students for fields such as community agency work, home economics in business, journalism, and home economics in the urban environment.

Students are required to take five to six credits from FSN 150, 201, 207 or 237; six credits from HCF 150, 200, or 201; HCF 330, 357; CNS 210; three credits from CNS 220, or 320; CNS 340; HSS 320; HEC 400; TMD 103, 224; three credits from TMD 216, 327, 340 or 440. Students are required to take additional courses that will give a total of 15 credits in one area of home economics (FSN, HCF, CNS or TMD) with at least 9 credits at the 300 or 400 level.

In addition, students are required to take 18 credits in a professional area of

interest, of which at least 9 credits are to be taken in a single area (adviser approval required); and field experience for at least 3 credits (adviser approval required).

A total of 128 credits is required for graduation.

## Home Economics Education

The curriculum in home economics education leads to a Bachelor of Science (B.S.) degree in home economics. The Master of Science (M.S.) degree is also offered by the department and is described in the *Graduate School Bulletin*.

The curriculum provides the following two options:

**Option I: Teacher Certification.** This program meets the state of Rhode Island requirements for certification (K-12) and also meets the Interstate Certification Compact which allows certification reciprocity with 31 states. The student teaching experience in the public schools (as well as additional field experiences) is included in the program during the senior year.

**Note:** Eligibility for student teaching will require a student to maintain a 2.5 quality point average in home economics courses and attain at least a C grade in HED 337 Teaching Effectiveness. Failure to meet these two conditions will lead to automatic dismissal from the certification option in the Home Economics Education Teacher Program.

**Option II: Non-Teacher Certification.** This program prepares individuals to teach and direct home economics educational activities in settings such as business, community agencies, adult programs, and home economics cooperative extension. An eight-credit eight-week intern experience is included in the program during the senior year.

Students are required to select and pass one course in each of the following home economics core areas: HCF 150, 200 or 330; FSN 201, 207, or 237; CNS 210, 220, 320 or 340; TMD 103 or 224. If not taken to complete the core requirements, students must also complete HCF 200, 330 and one HCF elective; EDC 102 or 403, or 407, and 312; EDC 484 or HED 483; HED 334, 337, EDC/HED elective; FSN 201, 207,



FSN elective; CNS 320, 340, CNS elective; TMD 103, 216, a clothing construction course.

A total of 128 credits is required for graduation.

## Human Development and Family Studies

The curriculum in human development and family studies leads to a Bachelor of Science (B.S.) degree in home economics. The Master of Science (M.S.) degree also offered by the department is described in the *Graduate School Bulletin*. The undergraduate curriculum provides a general background for work with children, families, and adults. Most such professions require academic work beyond the bachelor's degree for continuing professional work and advancement. Individuals with a baccalaureate degree are employed as professionals, however, in nursery schools, day-care centers, institutions and hospitals, recreational, child guidance, case work, and other community agencies. Some of the courses in this curriculum, plus certain others in education, meet the requirements for the Provisional Nursery-Kindergarten Certificate in Rhode Island. The Professional Certificate requires successful teaching experience for five years and additional academic work.

Students are required to select and pass one course in each of the following home economics core areas: FSN 201, 207, or 237; CNS 210, 220, 320 or 340; TMD 103 or 224. Students must also take HCF 150, 200, 203, 357, 330, 304, 400, 430, 310 or 420 or 406. Additionally, students must complete 18 credits in home economics or related areas subject to the approval of the departments, with a maximum of six credits in any one area outside home economics. EDC 484, 485 and HCF 380 may not be used.

Students who wish to meet the requirement for the Provisional Nursery-Kindergarten Certificate in Rhode Island must take the following courses in addition to the above: EDC 102 and 312, 484, and 485; HCF 301 and 303. The sequence of courses is extremely important since placements for student teaching will be during the fall semester only. Students interested in certification must apply by their third semester. It is suggested that they see

their University College advisers as early as possible in their program.

A total of 128 credits is required for graduation.

## Human Science and Services

This curriculum leads to the Bachelor of Science (B.S.) degree in human science and services. The program is highly interdisciplinary and allows students to build academic programs in human science and services consistent with their personal and career goals.

In addition to general education, students in this program study human development and human services, and select a combination of option areas designed to acquaint them with general fields of study and application in the human services. The program is designed primarily for students who are interested in the broad field of human science and services along with a combination of supporting or applied areas. Career opportunities are varied and include entry-level positions in fields such as health, recreation, instruction and training, family services, and consumer services. Many professional areas in human services require graduate study for significant career advancement; this program is also designed to serve as preparation for a variety of graduate programs. Close contact with an academic adviser is strongly recommended for students in this program.

Required coursework includes PHL 117<sup>1</sup>, SOC 102<sup>2</sup>, PSY 113<sup>2</sup>, ECN 125<sup>2</sup>, and PSC 113<sup>2</sup>. A course in ethics is strongly recommended. In addition, students complete a core in human science and services: HCF 200, 201; HSS 222; 320, 350, and a seminar. Each student in the program must also complete two option areas of approximately 18 credits each. Choices of the primary option area include: Adulthood and Aging, Child and Youth Studies, Community Health, Consumer Studies, Early Childhood Education, Educational Studies and Policy, Family Resource Management, Family Studies, Home Economics, Home Economics Education, Housing, Human Development, Instructional Communication, Recreational Program Services, and Textiles and Clothing. A wide range of choices is available for

the section option area, many of which allow the student to study allied fields in other colleges at the University. Each option area has specific course requirements (some of which include natural science courses which may be taken as part of General Education); students should check with their academic adviser for a detailed description of the requirements and options.

The program requirements also include a field experience (of at least 6 academic credits), professional electives (12 credits), and free electives (13 credits).

A total of 130 credits is required for graduation.

## Physical Education, Health and Recreation

This curriculum leads to a Bachelor of Science (B.S.) degree with a major in physical education. The Master of Science (M.S.) program in physical education is described in the *Graduate School Bulletin*.

The major, which has two options, is designed for students who plan to pursue a career within the broad field of health, physical education, recreation, and dance. Students may prepare for certification as public school teachers (Health and Physical Education K-12) while selecting additional study in either elementary physical education, secondary physical education, athletic coaching, athletic training, or health education. For those who may be interested in other than school careers the curriculum offers a non-teaching option with specializations in dance, physical fitness, corrective and adapted physical education, as well as in a variety of individual interdisciplinary areas.

Regardless of which of the two options the student is pursuing, the following courses are required of all majors: PED 270, 369, 370, physical activity majors practicum (8 credits), BIO 101, 102, chemistry or physics (3 credits), ZOO 121, 242, 343, PSY 113, 232, and EDC 312.

<sup>1</sup>May be taken as part of General Education (Letters).

<sup>2</sup>Two of these courses may be taken as part of General Education (Social Science).

All students are required to complete a minimum of eight practicum credits taken from the following: one credit from PED 121 or 122; two credits from PED 123, 124, 125, or 126; one credit from PED 222, or 223; one credit from PED 221, 251 or 252; one credit from PED 325, 326, or 327; one credit from PED 130, 230, 330, 335, or 340; one credit from PED 321. The above requirements are considered minimal.

Additionally, all majors pursuing the B.S. degree in physical education must complete a three-day camping experience at the W. Alton Jones campus. All incoming freshmen should check with their University College adviser for further details. The current fee is \$25 per student, and includes all meals, instruction, and overnight lodging for two nights.

**Teacher Certification Option.** This option is designed for students seeking teacher certification in health and physical education at the elementary and secondary school level. The curriculum allows a broad exploration of subject area, but is flexible enough to provide additional areas of study in teaching, coaching, athletic training, and health. Completion of the certification program fulfills the requirements for teacher certification in the state of Rhode Island and 39 additional states.

Within the teacher certification option, the following courses are required in addition to those required of all majors: HLT 172 or 272 or PED 243; PED 217, 295, 314, 315, 324, 380, 410; HLT 367, 377; 12 credits from EDC 486, 487, 488, 489; EDC 485 and 8 credits of professional electives.

**Non-Teacher Certification Option.** This option is designed for students seeking preparation for careers in non-school settings. The option provides additional opportunity for specializations in (1) dance, (2) physical fitness, (3) corrective and adaptive physical education, (4) interdisciplinary areas of interest.

In addition to the requirements listed above for all physical education majors, students in the non-teacher option are required to take: RCR 382, PED 317, HLT 123, three credits of seminar, and 12 credits of supervised field work (PED, RCR, or HLT 486).

Students selecting dance as a specialization must take PED 106B, 324, 331, 446, four credits from PED 106A, 106C,



106D, 106E, THE 151, 215, 216, and any two of the following courses: MUS 111, THE 100, 111, ART 215, SPE 231, or PHL 455.

Students selecting the physical fitness specialization must take FSN 207, PED 243, 275, 391, and either PSY 103 or HCF 150, and eight credits from PSY 103, HCF 150, 220, 450, HLT 272, or PED 410.

Students selecting specialization in corrective and adapted physical education must take PED 370, 410, 430, HLT 172, one course from RCR 416, PED 351 or 275, and one course from PSY 442, 471, or NUR 101.

Students who do not specialize in any of the above areas may complete a minimum of 18 credits in an individual, college, or University minor. See page 30 for a complete definition of a minor.

A total of 130 credits is required for graduation.

### Textiles, Fashion Merchandising and Design

This curriculum leads to a Bachelor of Science (B.S.) degree in home eco-

nomics. The Master of Science (M.S.) program is described in the *Graduate School Bulletin*.

The major is open to both men and women with ability and professional interest in the artistic and technical aspects of the subject.

Programs of study can be arranged to prepare students for positions in merchandising of apparel and interior furnishings, the home sewing industry, museum work, consumer services, and manufacturing. Qualified students can prepare for graduate studies.

Students in this curriculum are required to select and pass one course in each of the following home economics core areas: HCF 150, 200, or 330; FSN 201, 207, or 237; CNS 220<sup>3</sup>, TMD 103 or 224. If not taken to complete the core requirements, the following courses are required: TMD 103, 224, 216 or 327, 303<sup>4</sup>, 240 or 340, or 440, 390, 433<sup>3</sup>, 9 credits of TMD electives (6 credits must be upper level courses); in addition, 18 credits with at

<sup>3</sup>Economics prerequisite for CNS 220 and TMD 433.

<sup>4</sup>Organic chemistry is a prerequisite for TMD 303.

least 9 credits in any one area must be selected in relation to specified professional options listed below.

**Fashion Merchandising.** Students selecting this area of emphasis should take TMD 222, 232, 332, 422, and an additional 18 credits of professional electives<sup>5</sup> from marketing, accounting, business law, management science, management, and/or art.

**General TCRA Program.** Students selecting this area of emphasis should plan according to their professional goals such as consumer education, gerontology, family studies, and design for special needs groups. Eighteen credits of professional electives are required and should be chosen to strengthen professional goals of students.

**Textile Science.** Students may select a concentrated science program at the University of Rhode Island or plan to spend two semesters in off-campus study to fulfill the specialized requirements in textile dyeing, finishing, and manufacturing. By the end of the sophomore year, the student and adviser should have a program of study approved by the department. Off-campus study is currently available at the Philadelphia College of Textiles and Science (P.C.T.S.).

Students interested in this area of emphasis should take 3-9 credits in MTH 109, 141, 142; 3-6 credits in PHY 111 and 112 or 213 and 214; 3-6 credits in EST 408 or 412 or CSC 201 or 202 or ECN 125, and 18 credits of professional electives<sup>5</sup> selected from CHM 101 and 102, 112 and 114, 227, 228 and 226, 212 or from courses offered by P.C.T.S.

A total of 128 credits is required for graduation.

## Textile Marketing

This interdepartmental curriculum leads to a Bachelor of Science (B.S.) degree with a major in textile marketing. It combines the professional requirements of a major in textiles with the accreditation requirements of the College of Business Administration and is designed to prepare students for wholesale and retail marketing positions in the textile industry.

Students selecting this curriculum must take the following courses: TMD

103, 224, 303, 240, or 340 or 440, 403, 433, and three credits of TMD elective; CHM 105, 124; MTH 141; ESC 408, 412; CSC 201; ACC 201; MGT 300 or 301; BSL 333; MKT 301, 415, 409, and nine credits of MKT electives.

Students must also take the following courses to complete the general education requirements: MTH 109, CHM 103, and ECN 125.

A total of 120 credits is required for graduation.

## Urban Affairs

This interdisciplinary curriculum leads to a Bachelor of Science (B.S.) degree in home economics by combining courses of study in home economics and urban affairs. The home economics in the urban environment curriculum adds an understanding of urban areas and their people to a student's preparation in a broad home economics program. Students gain integrated understanding of families and their use of human and non-human resources to attain family goals, and the urban-related courses familiarize the students with the special needs of families in urban areas. Students with such a major might seek careers in urban cooperative extension, social welfare agencies, housing authorities, or consumer protection agencies.

Students are required to take six credits from FSN 150, 201, 207 or 237; six credits from HCF 150, 200 or 201; HCF 330, 357; CNS 210; three credits from CNS 220 or 320; CNS 340; HSS 320; HEC 400; TMD 103, 224; three credits from TMD 216, 327, 340 or 440. Additional courses must be taken for a total of 15 credits in one area of home economics (FSN, HCF, CNS or TMD) with at least 9 credits at the 300 or 400 level.

Students are also required to take the urban affairs common core (see page 11). Students are encouraged to have a field experience for at least three credits (adviser approval required).

In addition to the courses listed above, students must take three urban-related courses from the following list or consult the adviser for others. Adviser consultation is recommended for these courses.

- HCF 220 Gerontology Theory and Application
- HCF 380 Field Experience in Community Agencies

- HED 491 Teaching Home Economics: Adults
- CNS 401 Home Management of Deprived Families
- CNS 420 Consumer Protection
- CNS 470 Special Problems in Home Management
- ADE 497 The Cooperative Extension Service
- ADE 488 Methods and Materials for Adult and Extension Education
- ECN 401 Poverty in the United States
- HIS 344 History of North American Indians
- HIS 346 Immigration to Ethnicity in Modern America
- HIS 347 Women in the Twentieth Century
- PSC 221 State and Local Governments
- PSC 288 The American Legal System
- SOC 336 Social Stratification
- SOC 240 Minority and Majority Relations
- SOC 438 Aging in Society
- SWF 311 Introduction to Social Work
- SWF 313 Social Welfare Services
- SWF 317 Social Work Methods

A total of 128 credits is required for graduation.

<sup>5</sup>Professional electives are courses related to student's career goals and subject to adviser's approval.



# College of Nursing

Hesook S. Kim, Acting Dean  
Myrtle S. Matejski, Assistant Dean

The College of Nursing offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree also offered by the college is described in the *Graduate School Bulletin*.

**Faculty:** Professors Garner, Hirsch, and Kim; Associate Professors Castro, Feather, Matejski, McElravy, Morgan, and Schwartz-Barcott; Assistant Professors Barden, Burbank, Creamer, Evans, Fain, Fortin, Haggerty, Hall, Hames, Hogan, Joseph, Kiniry, Kraynek, Manfredi, Murdock, Palm, Pearson, Powell, Pickett, Rosendahl, Smith, and Waldman; Instructors Bringsjord, Clark, Hillemeier, Martins, Murray, and Reyes.

The baccalaureate program is designed to prepare men and women with academic and personal potential to become professional nurses. It aims to develop mature, well-informed graduates who will take their places as responsible members of society in meeting the challenges of health care delivery and of continued learning.

The curriculum is based on the belief that nursing is a creative activity which provides human services for the promotion of health, prevention of illness, and care for the ill. It is interdependent with all other disciplines concerned with health. Nursing knowledge is viewed as a unique synthesis drawn from the humanities, and the natural, biomedical, and social sciences. The conceptual approach to nursing incorporates the



whole person and his environment, adaptation-level theory, and nursing process. Nursing courses include observation and clinical practice in numerous hospitals, community agencies, schools, nursing homes, and physicians' offices throughout the state of Rhode Island.

There are three routes to admission to the College of Nursing baccalaureate program.

- 1) Students with no previous college of nursing study begin their preparation in University College with dual enrollment in the College of Nursing. After completion of 45-60 credits (which must include required foundation courses) with a minimum 2.2 quality point average, they may apply for confirmed admission to the College of Nursing. Priority is given to students with strong academic records and positive recommendations from faculty in introductory nursing courses.
- 2) Students with college study in another major or some nursing study in another baccalaureate program and a minimum of 45 completed credits, if accepted by the University, may be admitted directly.
- 3) Registered nurse students who have completed diploma or associate degree programs are not required to submit scholastic aptitude scores when seeking admission. As adult students who have developed competence in basic subject areas, they may demonstrate their mastery by completing the College

Level Examinations sponsored by the College Entrance Examination Board. Advanced credit allowances are based upon a review of the candidate's test scores and preparatory experience. Following direct admission to the college, students have the option of seeking credit by examination in subjects previously studied. They are required to enroll in some upper division nursing courses and to meet the remaining program specifications.

The usual time for completion of all requirements for students with no previous college or nursing study is eight semesters and one summer session. All students in the College of Nursing meet all of the General Education requirements of the University as listed on page 8. A minimal grade of C must be achieved in all required nursing courses. The faculty reserves the right to require withdrawal from the college of a student who gives evidence academically and/or personally of inability to carry out professional responsibility in nursing. The student is limited to 18 credits per semester except by permission of the dean for special program adjustments or for participation in the Honors Program.

General expenses for students in the College of Nursing are approximately the same as for all other University students. Special items include uniforms, nursing equipment, transportation, and one summer session. The use of an automobile or funds to meet



public transportation costs is required during the semester of community health nursing experience, and can offer broader opportunities for experience in all courses.

The program is approved by the National League for Nursing and the Rhode Island Board of Nurse Registration and Nursing Education. The graduate is eligible for examination for professional licensure.

## Curriculum Requirements

**Foundation Courses.** The following are required before transfer from University College: CHM 103, 105, 124 (8 credits), MIC 201 (4), NUR 101<sup>1</sup> (2), PSY 113 (3), ZOO 121, 242, 244 (8).

The following are required before beginning the nursing major and therefore are recommended during the first two years: FSN 207 (3 credits), NUR 220<sup>1</sup> (4), 225 (3); PSY 232 (3), PHY 102-103 (3), SOC 100 (3), English Communication (6).

### Freshman Year

First semester: 14 credits

- 3 CHM 103 Introd. Chemistry
- 1 CHM 105 Introd. Chemistry Lab. **or**
- 3 CHM 101 General Chemistry
- 1 CHM 102 General Chemistry Lab.
- 3 WRT 101 Composition I
- 3 SOC 100 General Sociology
- 4 ZOO 121 Human Anatomy

### Freshman Year

Second semester: 16 credits

- 4 CHM 124 Organic Chemistry
- 3 MTH 107 Introduction to Finite Math
- 2 NUR 101 Introd. to Nursing
- 3 PSY 113 General Psychology
- 3 ZOO 242 Human Physiology
- 1 ZOO 244 Human Physiology Lab.

**Nursing Major Courses.** The following are required for the nursing major: NUR 231 (6), 232 (4), PCL 226 (3), NUR 301 (7), 302 (4), 311 (3), 312 (3), 321 (3), 322 (4), 333 (5), 334 (5) 340 (3).

### General Education and Free Electives.

The General Education electives as required for all University undergraduates must be completed except that one of the following divisions may be reduced by 3 credits: fine arts and literature, letters, or foreign language and culture.

A total of 128 credits is required.

<sup>1</sup>Registered nurse students take NUR 211 (3 credits) and free electives in place of NUR 101 and 220.

## College of Pharmacy

Louis A. Luzzi, Dean  
Lois Vars, Assistant Dean

The College of Pharmacy offers a five-year curriculum leading to the Bachelor of Science (B.S.) degree in pharmacy and a special curriculum leading to the Bachelor of Science (B.S.) degree in respiratory (ventilation) therapy. The Master of Science (M.S.) degree, offered by all departments; the Doctor of Pharmacy (Pharm. D.) degree; the Doctor of Philosophy (Ph.D.) degree in pharmaceutical sciences offered by all departments except pharmacy administration, and the Master of Science (M.S.) degree in environmental health science are described in the *Graduate School Bulletin*.

## Pharmacy

This five-year curriculum is patterned on presently accepted programs of study recommended by the American Association of Colleges of Pharmacy, the American Council on Pharmaceutical Education, and other interested organizations. It is accredited by the American Council on Pharmaceutical Education and by the University of the State of New York, Division of Professional Education.

It provides preparation for community and institutional pharmacy practice. In addition, students have opportunities through the selection of professional electives to commence a specialization in one of several areas of pharmacy, including hospital, clinical, manufacturing, medical supply servicing, drug analysis, administration, and research.



The satisfactory completion of the degree in pharmacy is one of the prerequisites for a license to practice pharmacy. Licensure is obtained after graduation by successfully completing the examination given by the Rhode Island State Board of Pharmacy or those of other states. In preparation for this, students are encouraged to participate in externship or internship programs.

Students begin their preparation in University College with a dual enrollment in the College of Pharmacy. All students requesting transfer from University College to the College of Pharmacy must have at least a 2.0 overall quality point average in those basic science courses required for transfer; viz., at the end of three semesters CHM 101, 102, 112, 114, and 227; MIC 201; MTH 141; PHY 109, 110; ZOO 111 and 121; at the end of four semesters the foregoing courses plus CHM 226 and 228; ZOO 242 and 244 (or equivalent courses, where permitted).

A quality point average of 2.0 in all required professional courses given by the College of Pharmacy is required for graduation with a B.S. degree in pharmacy. This is in addition to University grade requirements.

Students in certain other New England states may enroll in pharmacy under the New England Regional Student Program. See page 18.

**Medicinal Chemistry Faculty:** Professor Worthen, chairperson. Professors Abushanab, Smith, and Turcotte;

Associate Professor Panzica; Emeritus Professor Bond.

*Pharmacognosy and Environmental Health Faculty:* Professor Worthen, chairperson. Professor Shimizu; Assistant Professor Lasswell; Emeritus Professor Youngken; Adjunct Professors Nakanishi and Siino; Clinical Professor Cannon.

*Pharmacology and Toxicology Faculty:* Professor DeFeo, chairperson. Professor DeFanti; Associate Professors Shaikh and Swonger; Assistant Professor Rogers; Adjunct Professors Karkalas, Lal, and Turner; Adjunct Associate Professors Cardinale, Fielding, Kaplan, Lundgren, Pogacar, Smith, and Vidins; Adjunct Assistant Professors Dexter, Hammond, Jackim, Khan, Malcolm, Miller, and Verrier; Clinical Professor Calabresi; Clinical Lecturer Yashar.

*Pharmaceutics Faculty:* Professor Rhodes, chairperson. Professors Osborne and Paruta; Associate Professor Lausier; Assistant Professors Birmingham and Gardner; Adjunct Professors Barnett, Kanig, Loftus, Monkhouse, and Warren; Adjunct Associate Professors DiBenedetto, Horhota, and Marshall; Adjunct Instructor Soja.

*Pharmacy Practice Faculty:* Associate Professor Taubman, chairperson. Professor Campbell; Associate Professors Mattea and Weber; Assistant Professors Carisiti, DeTorres, Dudley, Dugas, McFarland, and Owens; Instructors Truncellito and Russell; Adjunct Professors Ford, Carlin, and Leco; Adjunct Assistant Professor Hachadorian; Adjunct Instructors Auger, Bulger, Gibson, Grant, Holm, Lombardi, Menard, Pagliarini, and Roy.

### Curriculum Requirements

The five-year program for all accredited colleges of pharmacy provides time for the General Education requirements as described on page 8. The major portion of the professional program begins in the third year when basic pharmaceutical and clinical disciplines are introduced.

Each year the curriculum is supplemented by field trips to selected pharmaceutical industries. Students also make use of selected hospital and community pharmacies in Rhode Island and New England for clinical studies and internship requirements.

Total credits required: 164.

### First Year

First semester: 17 credits

- 3 CHM 101 Gen. Chemistry I
- 1 CHM 102 Lab. for Chemistry 101
- 3 PSY 113 Gen. Psychology **or** elective
- 3 WRT 102 Composition<sup>1</sup> (or proficiency test and elective)
- 4 ZOO 111 General Zoology
- 3 Elective

### First Year

Second semester: 17 credits

- 3 CHM 112 Gen. Chemistry II
- 1 CHM 114 Lab. for Chemistry 112
- 3 MTH 141 Introd. Calculus
- 3 WRT 300 Advanced Expository Writing **or** WRT 333 Scientific and Tech. Writing **or** SPE 103 Interpersonal Communication
- 4 ZOO 121 Human Anatomy
- 3 Elective

### Second Year

First semester: 17 credits

- 3 CHM 227 Organic Chemistry Lecture
- 3 ECN 125 Econ. Principles
- 4 MIC 201 Introd. Med. Microbiology
- 3 PHY 109 Introd. to Physics
- 1 PHY 110 Lab for Introd. to Physics
- 3 Elective

### Second Year

Second semester: 17 credits

- 3 CHM 228 Organic Chemistry Lect. II
- 2 CHM 226 Organic Chemistry Lab.
- 2 HLT 272 Advanced First Aid
- 3 ZOO 242 Introd. Human Physiology
- 1 ZOO 244 Introd. Human Physiology Lab.
- 6 Electives

### Third Year

First semester: 17 or 18 credits

- 3 ASP 401 Introd. to Pathology
- 3 BCP 311 Introd. Biochemistry
- 3 PHP 349 Pharm. Adm. Principles
- 2 PHC 327 Biopharmaceutics

**and**

Section A

- 5 PHC 330 Gen. Pharm. Technology
- 2 PHC 331 Lab. for Gen. Pharm. Technology

**or**

Section B

- 3 MCH 342 Pharmaceutical Analysis
- 3 Elective

### Third Year

Second semester: 19 credits

- 3 MCH/PCL 344 Principles of Medicinal Chem. and Pharmacology

- 3 PHP 351 Pharm. Law and Ethics
- 3 PCG 446 Gen. Pharmacognosy Lecture
- 3 PHC 328 Pharmacokinetics

**and**

Section A

- 3 MCH 342 Pharmaceutical Analysis
- 1 PCG 447 Gen. Pharmacognosy Lab.
- 3 Elective

**or**

Section B

- 5 PHC 330 Gen. Pharm. Technology
- 2 PHC 331 Gen. Pharm. Technology Lab.

### Fourth Year

First semester: 17 credits

- 3 MCH 443 Organic Medic. Chemistry
- 3 PCG 445 Gen. Pharmacognosy
- 3 PCG 459 Public Health
- 4 PCL 441 Gen. Pharmacology
- 3 PHP 451 Pharmacotherapeutics I

**and**

Section A

- 1 PCL 443 Gen. Pharmacology Lab.

**or**

Section B

- 1 PCG 447 Gen. Pharmacognosy Lab.

### Fourth Year

Second semester: 16 credits

- 3 MCH 444 Organic Medic. Chemistry
- 4 PCL 442 Gen. Pharmacology
- 3 PHP 452 Pharmacotherapeutics II

**and**

Section A

- 6 Electives

**or**

Section B

- 1 PCL 443 Gen. Pharmacology Lab.
- 4 PHC 460 Non-Prescription Drugs
- 1 PHP 470 Pharmacy Practice

### Fifth Year

First semester: 12 or 14 credits

Section A

- 4 PHC 460 Non-Prescription Drugs
- 1 PHP 470 Pharmacy Practice

**or**

<sup>1</sup>CMS 101 (6 credits) may be substituted for the writing requirement.



### Section B

- 6 PHP 485 Pharmacy Practice Externship
- 6 PHP 490 Clinical Pharmacy Clerkship

### Fifth Year

Second semester: 12 or 15 credits

#### Section A

- 6 PHP 485 Pharmacy Practice Externship
- 6 PHP 490 Clinical Pharmacy Clerkship

or

#### Section B

- 15 Electives

## Respiratory Therapy

The program in respiratory therapy prepares students for an allied health specialty related to the management of respiratory disease. The respiratory

therapist works with the physician, pharmacist, nurse, and other specialists in a hospital or institutional environment where multiple responsibilities are necessary in the care of patients.

### Curriculum Requirements

To qualify for the Bachelor of Science program in respiratory therapy, students must complete a two-year program in respiratory therapy including clinical work. This may be carried out at the Community College of Rhode Island or an equivalent community college with a clinical program in respiratory therapy leading to an associate degree.

The student program at the University of Rhode Island includes one of two majors — education or administration/supervision.

A total of 65 University of Rhode Island credits are required.

The following curriculum is subject to change.

### Junior Year<sup>2</sup>

First semester: 16 credits

- 4 CHM 124 Organic Chemistry
- 3 MTH 141 Introd. Calculus with Analytic Geometry
- 3 SOC 100 Gen. Sociology
- 3 EDC 312 The Psychology of Learning
- 3 Elective<sup>3</sup>

### Junior Year

Second semester: 16 credits

- 3 ASP 401 Introd. to Pathology
- 3 MGT 300 Personnel Administration or MGT 301 Fundamentals of Management<sup>4</sup>
- 3 CSC 201 Computer Science
- 4 PHY 112 Gen. Physics
- 3 Elective

### Senior Year

First semester: 18 credits

- 3 BCP 311 Introd. Biochemistry
- 3 ELE 300 Elec. Instrum. for Biology and Health Sciences
- 3 EDC 340 Methods and Materials in Secondary Teaching
- 3 SOC 224 Medical Sociology
- 3 RTH 499 Special Problems in Respiratory Therapy
- 3 Elective

### Senior Year

Second semester: 15 credits

- 3 PCL 226 Pharmacology and Therapeutics
- 3 RTH 499 Special Problems in Respiratory Therapy
- 3 Elective
- 3 Elective
- 3 Elective

<sup>2</sup>Summer session programs may be needed to fulfill all curriculum requirements.

<sup>3</sup>Additional prerequisites may be required for certain elective areas of the major.

<sup>4</sup>MGT 301 required for students with an administrative/supervision core.

# College of Resource Development

Gerald A. Donovan, Dean  
Earl F. Patric, Associate Dean for  
Student Affairs and Research

The College of Resource Development offers undergraduate programs leading to the Bachelor of Science (B.S.) degree in animal science and technology, aquaculture and fishery technology, food science and nutrition, natural resources, plant science and technology, and urban affairs. A number of options have been developed within most programs to permit students to prepare for specific graduate study, further professional training or for specialized careers at the B.S. level. Entering freshmen and transfer students with fewer than 24 credits should matriculate in one of these programs as well as in University College. Students may select one of the options at the time of transfer from University College or later, with approval dependent upon favorable review by the program faculty. The college also offers a two-year program in fisheries and marine technology leading to the Associate in Science (A.S.) degree. All undergraduate programs are administered by the Associate Dean for Student Affairs and Research together with the academic advisers and the program faculties.

The Resource Development faculty differs from those in the other colleges in that most hold joint appointments with the Rhode Island Agricultural Experiment Station and/or the Rhode Island Cooperative Extension Service. These units represent the formal research and public service functions of the college and are funded with federal and state monies. In addition, some



faculty members have formal commitments to the International Center for Marine Resource Development and the Sea Grant program.

Graduate programs leading to the Master of Science (M.S.) degree are offered in most departments. Several programs lead to the Doctor of Philosophy (Ph.D.) degree. The professional degree of Master of Community Planning (M.C.P.) is offered by the Department of Community Planning and Area Development. Detailed descriptions of the several graduate programs appear in the *Graduate School Bulletin*.

## Faculty

**Animal and Veterinary Science Faculty:** Associate Professor Gray, chairperson. Professors Chang, and Donovan; Associate Professors Millar and Nippo; Assistant Professor Rhodes; Adjunct Assistant Professors Balmforth and Kaiser.

**Community Planning and Area Development Faculty:** Professor Galloway, director. Associate Professors Feld, Foster, and Kupa; Assistant Professor Landis; Adjunct Professor Thomas; Adjunct Associate Professor Kume-kawa; Adjunct Assistant Professors Johnson and Shamoon.

**Fisheries, Aquaculture and Pathology Faculty:** Professor Meade, chairperson. Professors Chang, Durfee, Smith, and Wolke; Associate Professor Recksiek; Assistant Professors Bradley, DeAlteris, Hillier, Stout, Vincent, and Wing; Special

Instructor Gamache; Adjunct Professor Amos; Adjunct Associate Professor Gentile; Special Instructor Drew.

**Food Science, Technology, Nutrition and Dietetics Faculty:** Professor Rand, chairperson. Professors Chichester, Constantinides, Cosgrove, Dym-sza, T. Lee, Olney, and Simpson; Associate Professors Brown, Caldwell, Eshleman, C. Lee, and Nippo; Assistant Professors Gerber, Siegel, and Stauffer; Instructor Percival; Adjunct Professor Silverman; Adjunct Associate Professors Beck, Coduri, and Taylor; Adjunct Assistant Professors Heimendinger, Howe, Lee, and Maugle.

**Natural Resources Science Faculty:** Associate Professor Wright, chairperson. Professors Brown, Felbeck and Patric; Associate Professors Golet, Gould, Husband and Sheehan; Assistant Professors Gilbert and Gold.

**Plant Pathology-Entomology Faculty:** Professor Mueller chairperson. Professors Beckman, Jackson, and Traxler; Associate Professors Casagrande, Englander, and LeBrun; Assistant Professors Kim, Hanson, and Logan; Adjunct Professor Kaplan; Adjunct Assistant Professor Bascom.

**Plant Science Faculty:** Professor McGuire, chairperson. Professors Hindle, Hull, Skogley and Wakefield; Associate Professors Duff, Dunnington, Gough, Jagschitz, Krul, McKiel, and Shaw; Assistant Professor Sullivan; Adjunct Assistant Professor Dellaporta.



*Resource Economics Faculty:* Associate Professor Weaver, *chairperson*. Professors Gates, Grigalunas, Holmsen, Lampe, Rorholm, and Spaulding; Associate Professors Sutinen and Tyrrell; Assistant Professors G. Anderson, J. Anderson, Crutchfield, and Opaluch; Adjunct Assistant Professor Andersen.

*Resource Development Education Faculty:* Professor McCreight, *director*. Professor Dvorak; Assistant Professor Mallilo.

## Bachelor of Science Curriculum Requirements

All B.S. programs offered in the college require a minimum of 130 credits in three categories: general education (36 credits), free electives (12 credits), and program (82 credits).

The General Education requirements provide exposure to English communications, mathematics, natural sciences, social sciences, letters, fine arts/literature, and foreign language/culture as directed by the University faculty, and must be selected from the approved lists of courses for the several categories.

A block of free elective courses is available in each program to give students the opportunity to explore areas of knowledge that may be unrelated to their principal program.

The program requirements include introductory professional courses, basic sciences, concentration courses, and supporting electives. Advisory materials for each program include a list of these courses. These are available upon request from the Office of Student Affairs and Research. Students, working closely with their faculty advisers, may shape their programs to accommodate general or specific needs and interests not represented by one of the options.

Students pursuing an option will encounter much more structure, particularly in the basic sciences and in the concentration requirements. The structure reflects specific admission requirements to graduate or professional programs on the one hand, and the professional requirements of an accrediting agency on the other. The additional requirements for the options are also available on request from the Office of Student Affairs and Research.

## Animal Science and Technology

This program is for students interested in applied animal science careers. Options are available to students interested in veterinary medicine, animal sciences, and in various phases of the equine or laboratory animal industries. Those students who intend to use their study in animal science as credentials for secondary school teaching should also enroll in this program.

The program requires a minimum of 7 credits in introductory animal science and genetics; 8 credits in zoology and botany; 8 credits in inorganic chemistry; and 3 credits in algebra/trigonometry. In addition, 9-12 credits shall be selected in basic science, 24 credits of concentration courses, and 26-29 credits of supporting electives approved for the program.

**Preveterinary Option.** This option prepares students for admission to veterinary schools offering the D.V.M. degree and requires a demonstrated capability in the basic science. Because admission requirements among schools are not totally uniform and are subject to change, students should determine specific requirements of the schools in which they are interested. Those who are not accepted for veterinary training will be well prepared to pursue graduate programs in animal physiology and health.

In addition to the requirements of the program, option students must complete the following basic science requirements: two-semester sequence in organic chemistry (8), biochemistry (3), microbiology (4), general physics (8), introductory calculus (3), and intermediate calculus or statistical methods in research (3). Three credits in animal anatomy and physiology are required in the concentration. The remaining credits shall be selected from the concentration courses and supporting electives approved for this option.

**Animal Science Option.** This option includes animal nutrition, physiology, genetics, and diseases. Students will normally emphasize one or more of these areas. A strong preparatory background in the basic sciences is needed. Students in this option seek employment in technical areas and/or continue their studies in specialized graduate programs.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4 or 8), introductory calculus (3), microbiology (4). A course in animal anatomy and physiology is required in the concentration. The remaining credit requirements shall be selected from the concentration courses and supporting electives approved for this option.

**Laboratory Animal Option.** Research techniques and procedures for animal care are emphasized along with a strong background in the sciences. Students with this training and animal experience would be employed in research and teaching facilities as animal technicians, animal technologists, supervisors of animal attendants, and assistant research project leaders.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4 or 8), introductory calculus (3), microbiology (4), and statistical methods (3). Six credits in animal management and three in animal anatomy and physiology are required in the concentration, and three credits of general nutrition in the introductory college courses. The remaining credit requirements shall be selected from the concentration courses and supporting electives approved for this option.

**Animal Management Option.** This option provides a broad basis in animal science. A variety of scientific disciplines, together with their practical application to animal management is available. Students usually seek employment in animal agriculture or agri-industry related positions.

In addition to the requirements of the program, option students include 6 credits of animal management in the concentration. The remaining credit requirements in the basic sciences, concentration, and supporting electives must be selected from courses approved for this option.

## Aquaculture and Fishery Technology

Students who wish to prepare for professional or technical positions in aquaculture, marine, or fisheries-

oriented occupations should enroll in this program. Students who demonstrate superior ability in the basic sciences and wish to continue their professional training in aquaculture or fishery technology should choose the appropriate option.

The program requires a minimum of 6 credits in natural resource conservation and resource economics; 6-8 credits in animal and plant biology; 4 credits in general chemistry; 4 additional credits in general or organic chemistry; and 3 credits in algebra/trigonometry. Biology and chemistry courses should be selected from the requirements of the chosen option. In addition, 9-12 credits in the basic sciences; 24 credits in concentration courses, and 30-35 credits of supporting electives should be selected from the courses approved for this program.

**Aquaculture Option.** Students who plan to prepare for graduate programs leading to research careers in aquaculture, or to specialized technical positions in the aquaculture industry should choose this option.

In addition to the requirements of the program, option students complete introductory courses in aquaculture (3) and general genetics (3). They must also include in their basic sciences 8 credits of organic chemistry, 6 credits in introductory and intermediate calculus, 3 credits in statistical methods in research, 4 credits in microbiology, 4 credits in physics, 3 credits in human physiology, and 3 credits in general ecology. The remaining credits shall be selected from the concentration courses and supporting electives approved for this option.

**Fishery Technology Option.** Students in this option prepare for advanced degree programs in marine science or for immediate employment in related government careers or in the commercial fishing industry.

In addition to the requirements of the program, option students complete introductory courses in commercial fisheries (3), food science (3), and fisheries economics (6). They must also complete 8 credits in organic chemistry, 6 credits in introductory and intermediate calculus, 4 credits in physics, 3 credits in statistical methods in research, and 3 credits in general ecology. The remaining credits shall be selected from the concentration courses

and supporting electives approved for this option.

## Food Science and Nutrition

This program prepares for professional or technical careers in biotechnology, food science, nutrition, and dietetics. Students who demonstrate ability in the basic sciences and have professional interest in food science and technology, biotechnology, or nutrition, should choose those options. Those aspiring toward employment as dietitians should select the dietetics option.

The program requires a minimum of 6 credits in general nutrition and food science; 6-8 credits in animal and plant biology; 4 credits in general chemistry; 4 credits in the second general chemistry or organic chemistry; and 3 credits in algebra/trigonometry. Biology and chemistry courses should be selected from the requirements of the chosen option. In addition, 9-12 credits in the basic sciences, 24 credits of concentration courses, and 30-35 credits of supporting electives should be selected from courses approved for this program.

**Biotechnology Option.** Biotechnology is the integration of basic and applied science for the modification of life forms, development of new biological systems, and conversion and processing of materials of a biological nature. It is a multidisciplinary field which deals with the use of microorganisms, plants, or their component parts. Biotechnology encompasses all of the food industry as well as the fermentation and biochemical industries, antibiotic and enzyme production, and the biological treatment of water and effluents.

In addition to the requirements of the program, students in this option must complete the following basic science requirements: organic chemistry (8), biochemistry (3), microbiology (4), plant physiology (3), introductory calculus (3), and introductory physics (4). The concentration includes courses in applied biochemistry (food biochemistry), cell biology, applied biology (plant cell and tissue culture), biochemical processes (food processing, industrial microbiology, quality control, food microbiology, food analysis), and process engineering (food engineering). The supporting electives include a

course in statistical methods in research, the plant tissue culture laboratory, and a course in bioprocessing, with the remainder selected from courses approved for this option.

## Food Science and Technology Option.

Food science is the application of science and technology to the processing, preservation, and distribution of food with special emphasis on seafood. It is the key to converting raw food materials into a wide variety of preserved and processed foods. It deals with the processing of existing food supplies, developing new food products in order to feed the rapidly increasing world population, and improving the nutritional level of diets throughout the world. The option is officially recognized by the Institute of Food Technologists.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (8) or organic chemistry (3) and biochemistry (3); introductory calculus (3); microbiology (4); and general physics (4). The concentration courses include marine food processing (4), food analysis (4), food biochemistry (3), food processing (3), food chemistry lab (3), food engineering (4), and food microbiology (3). The supporting electives include courses in statistical methods in research and food safety and sensory evaluation, with the remainder selected from the list of courses approved for this option.

**Dietetics Option.** Dietetics is the professional study of human nutrition to help people select nutritionally adequate diets throughout their life span. Careers include those related to food service systems and to nutritional care of individuals and groups. The option incorporates all of the minimum academic requirements of the American Dietetic Association. Graduates are eligible to apply for dietetic internships.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4), biochemistry (3), microbiology (4), and human physiology (3). Concentration requirements include advanced food study (3), quantity food production (3), quantity food purchasing (3), food

service management (3), advanced nutrition (3), nutrition and disease (3), educational methods and materials (3), psychology of learning (3), and personnel administration (3). The supporting electives require the introductory course in food study, with the remainder selected from courses approved for this option.

**Nutritional Science Option.** This option deals with the action and interaction of nutrients and other substances in food in relation to health and disease. It studies primarily the body's requirements for nutrients, but also analyzes the social, economic, cultural, and psychological implications of food and eating.

In addition to the requirements of the program, option students must complete the following basic science requirements: biochemistry (3), human physiology (3), and statistical methods (3). Concentration requirements include advanced nutrition (3) and nutrition and disease (3), with the remainder selected from the approved option courses. The supporting electives include the introduction to food study (3) and must be selected from the courses approved for this option.

## Natural Resources

This program gives students solid academic training in all the major areas of natural resources science and management. It is designed for those students who have a strong interest in the natural world and who are committed to the maintenance of environmental quality and the wise use of our natural resources. Options in Forest Science, Wildlife Biology and Management, Soil Science, Water Resources, and Resource Economics provide in-depth training in specific, career-related disciplines. Students who wish to obtain a broader background enroll in the Natural Resources Studies Option.

All six options require a minimum of 10 credits of basic coursework in natural resource conservation, soils, and resource economics; 6-8 credits in botany and zoology; 4 credits in general chemistry; 4 additional credits in general or organic chemistry; 4 credits in physics; and 3 credits in algebra and trigonometry or more advanced mathematics. Particular course selections vary slightly among the options.

**Forest Science.** This option introduces students to the field of forestry and prepares them for further study at accredited forestry schools and at the graduate level. While this is not designed to prepare students for professional work in forestry immediately after graduation, a limited number of such opportunities do exist.

As part of their basic science requirements, students in this option must complete 3 credits of coursework in introductory calculus, an additional 3 credits in mathematics or computer science, 3 credits in introductory ecology, and 3-4 credits in basic geology. The second semester of chemistry must be organic. Courses required for concentration and supporting elective credit include: forestry (6), wildlife management (3), field botany (3), soil genesis and classification (4), statistics (3), surveying (3), and plant diseases or entomology (6). Additional courses are selected in consultation with a faculty adviser.

### Wildlife Biology and Management.

This option prepares students to meet the educational requirements for state and federal employment in the wildlife profession, and for certification under the Wildlife Society's national program. It also provides an excellent background for graduate study in wildlife management.

As part of their basic science requirements, wildlife students must complete 3 credits of coursework in introductory calculus, an additional 3 credits in mathematics or computer science, 3 credits in introductory ecology, and 3-4 credits in basic geology. The second semester of chemistry must be organic. Required concentration courses include: wildlife management (9); vertebrate biology (3); animal physiology (3); forestry (3); field botany (3); and one additional course in forestry or aquaculture (3). Supporting electives include: botany (3), zoology (6), and statistics (3). Additional supporting electives are chosen in consultation with a faculty adviser.

**Soil Science.** This option is concerned with the soil system as a natural body; it deals with the physical, chemical, and biological properties of soils, and their relationship to higher plants. Students in this option will have the background in soils and the basic sciences needed for national certification as a

soil scientist and for graduate study.

Under the basic sciences, Soil Science students are required to take organic chemistry (3-4), quantitative analysis (4), physical geology (4), microbiology (4), introductory calculus (3), and physics (4-8). In the concentration, 9-12 credits shall be selected from courses in soil chemistry, soil biochemistry, soil genesis and classification, soil microbiology, and geomorphology. The remaining concentration courses and supporting electives are selected in consultation with a faculty adviser.

**Water Resources.** This option is designed for students with an interest in the management of water and related land resources. It is an appropriate choice for those who plan to pursue careers in wetland ecology, forest hydrology, water resources planning, agricultural water management, or water pollution abatement. The option also provides sound preparation for graduate study in water resources management.

As part of their basic science requirements, Water Resources students must take introductory ecology (3), basic geology (3-4), computer science (3), introductory calculus (3), and 6 additional credits from chemistry or economics, depending upon the student's career objectives. Courses in wetland ecology (4), water resources management (3), and limnology (4) are required for concentration credit. Additional concentration and supporting elective courses are selected from a broad array of disciplines, including: soil science, wildlife management, forestry, geology, botany, zoology, resource economics, environmental law, land use planning, fisheries, civil engineering, and marine affairs.

**Resource Economics.** This option introduces students to the concepts and techniques of economics in the conservation and management of natural resources, and can prepare students for graduate study in a wide variety of applied areas.

Under the basic sciences, Resource Economics students must complete courses in introductory calculus (3) and introductory ecology (3). Three credits in intermediate microeconomic theory are required in the concentration. The remaining concentration courses and supporting electives are selected in consultation with a faculty adviser.

**Natural Resources Studies.** This option was designed for those students who wish to obtain a broader background than is possible in any of the specialized options listed above. Flexible curriculum requirements allow these students to develop individual areas of concentration, and to maximize the variety of natural resources positions for which they might be qualified upon graduation. This option is the best choice for students who plan to become certified as teachers of natural resources at the secondary level. It also provides a solid foundation for graduate study in several natural resources disciplines.

As part of their basic science requirements, Natural Resources Studies students must complete one course in introductory ecology (3) and one in basic geology (3). For the concentration area, 15 credits must be selected from upper-level offerings in the Department of Natural Resources Science. Additional concentration courses and supporting electives are chosen in consultation with a faculty adviser.



## Plant Science and Technology

This program provides a strong background in the plant and related sciences. Students may prepare for careers in the more practical or technical aspects, or choose the basic and applied sciences needed for graduate study. Students interested in forage and food crops, and those planning to include teacher training should enroll in this program.

The program requires a minimum of 14 credits in introductory plant science, soils, plant protection, and general genetics; 8 credits in botany and zoology; 8 credits in general chemistry; and 3 credits in mathematics. An additional 9-12 credits, including a course in plant physiology must be selected in basic sciences; 24 credits of concentration courses, and 22-25 credits of supporting electives from courses approved for the program.

**Food Crop Management Option.** This option offers students a broad background in the basic and applied plant sciences. Students can develop specialization in the scientific principles of growing important agricultural food

crops such as fruits and vegetables as well as field and forage crops. Specialization is also offered in resource mechanics. Career opportunities range from farming to working for agricultural seed, fertilizer, and chemical companies as well as positions in the state and federal government in advisory, service, regulatory, and management positions.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4) and plant physiology (3). The remaining credits in concentration and supporting electives must be chosen from courses approved for this option.

**Landscape Design Option.** This option provides the students with professional skills for work in the public or private sectors as landscape managers, landscape designers, landscape designer/salesmen, or landscape designer/contractors. Those with superior academic performance can expect to qualify for admission into accredited programs in landscape architecture or in related programs in city and regional planning.

The requirements of the program

apply to this option, except that the 9-12 credits of additional basic science are flexible. The 24-credit program required for the concentration is totally structured, and consists of the courses in design, construction, and plant materials. Courses in drawing, photography, surveying, and urban planning are required as supporting electives with the remainder selected from the courses approved for this option.

**Ornamental Horticulture Option.** This option prepares students for technical positions in ornamental horticulture and floriculture, and for graduate study, teaching, or cooperative extension careers in this field.

In addition to the requirements of the program, option students must complete the following basic science requirements: plant physiology (3), organic chemistry (4), general physics (4-8). The remaining credits in concentration and directed electives must be chosen from courses approved for this option.

**Plant Protection Option.** This option offers a strong integrated background in the basic and applied aspects of plant health, and includes studies of the bio-



logical agents that affect the ecological and economic well-being of plants. It may lead to a terminal degree or be a preparation for graduate study in plant protection, plant pathology, entomology, weed science, and other disciplines in plant science.

In addition to the requirements of the program, option students must complete the following basic science requirements: plant physiology (3), plant anatomy (3), field botany, organic chemistry (8), microbiology (4) and statistical methods (3). The remaining concentration courses and supporting electives shall be selected from courses approved for this option.

#### **Turfgrass and Grounds Management**

**Option.** This option is designed to prepare students for professional careers in this field. Graduates may be employed in sod production, in landscape construction, or as superintendents of golf courses, cemeteries, parks, or industrial, public, or military grounds. They are also employed in sales positions within supporting industries.

In addition to the requirements of the program, option students must complete the following basic science requirements: organic chemistry (4) and plant physiology (3). Concentration course requirements include 6 credits in turf management, 6 credits in entomology, 3 credits in plant pathology, weed science and soil conservation, and 4 credits in plant nutrition. Supporting electives must be selected from courses approved for this option.

#### **Urban Affairs**

This program, Resource Development in the Urban Environment, is part of the interdisciplinary Urban Affairs Program (see page 11), and provides students with an understanding of how human and natural resources pertain to urban affairs. Training deals with problems related to natural resources in contemporary society.

Students, with the help of advisers, develop individual programs which meet the college and program requirements, and contain the flexibility needed to accommodate their varying interests.

All students are required to complete 3 credits of introductory work in Urban

Affairs and 15 additional credits selected from courses approved for this level. Basic science requirements include animal and plant biology (6-8), general chemistry (4), additional chemistry, physics, or natural science (4), and algebra/trigonometry (3). In the concentration, the program prescribes four groups of courses and the minimum credits required for each group. Eighteen of these credits shall apply to the Urban Affairs Program core requirement. Supporting electives shall be selected from recommended courses pertaining to resources (18), social sciences (9), and communication (9). Free electives (15-17).

#### **Teacher Certification**

Students in the animal science, plant science, or natural resources program who are interested in careers as secondary school teachers in agri-business and natural resources may meet the Rhode Island Department of Education certification requirements with appropriate advisement.

In addition to 36 credits of resource development coursework, the following courses in the supporting electives may be included: EDC 102 (3), PSY 113 (3), EDC 312 (3), RDE 444 (3), EDC 484 (9-12), EDC 485 (3), RDE 486 (1-6), and 9 credits in related mechanics. Students should select a second adviser from Resource Development Education to provide the necessary technical assistance.

#### **Associate in Science Program**

**Fisheries and Marine Technology.** This two-year program, leading to the Associate in Science degree, was designed in cooperation with commercial fishermen and federal and state agencies to provide a thorough training for students intending to enter any sphere of commercial fisheries or marine technology. The 72-credit curriculum provides fundamental knowledge of fishing vessel operation; equipment handling; navigation; fishing gear and methods; fishery business, economics, marketing, and legislation.

Work on board ship, in the net loft, in seamanship and navigation laboratories, engineering laboratory, and in marine electronics and vessel technology laboratories make up a good part of the

credit hours. Formal classes on the campus provide a background in the social, biological, and physical sciences, as well as the professional subjects of navigation, seamanship, fishing gear and methods, engineering, marine electronics, and vessel technology. Laboratory work is conducted on board the training vessel and in the waterfront laboratories.

This program is available to students in all New England states under the New England Regional Program sponsored by NEBHE (see page 18).

*First semester: 17 credits*

FMT 013 (3), 020 (1), 101 (3), 118 (3), MTH 109 (4), REN 136 (3).

*Second semester: 17 credits*

FMT 014 (1), 110 (4), 121 (3), 131(3), SPE 101 or PHL 101 (3), WRT 101 (3).

*Third semester: 19 credits*

FMT 241 (4), 261 (4), 281 (4), 293 (1), 351 (3), REN 236 (3).

*Fourth semester: 19 credits*

FMT 222 (2), 223 (1), 235 (2), 242 (4), 371 (3), 382 (4), 393 (3).

# Courses of Instruction



## Course Codes

ACC - Accounting	FLF - Foreign Language Film	NRS - Natural Resources Science
ADE - Adult and Extension Education	FRN - French	NES - New England Studies
AAF - African and Afro-American Studies	GMA - Geography and Marine Affairs	NUE - Nuclear Engineering
AVS - Animal and Veterinary Science	GEL - Geology	NUR - Nursing
APG - Anthropology	GER - German	OCE - Ocean Engineering
ASP - Aquacultural Science and Pathology	GRK - Greek	OCG - Oceanography
ART - Art	HLT - Health	PHC - Pharmaceutics
AST - Astronomy	HBW - Hebrew	PCG - Pharmacognosy
BGS - Bachelor of General Studies	HIS - History	PCL - Pharmacology and Toxicology
BCP - Biochemistry and Biophysics	HEC - Home Economics	PHP - Pharmacy Practice
BIO - Biology	HED - Home Economics Education	PHL - Philosophy
BOT - Botany	HPR - Honors Program	PED - Physical Education
BSL - Business Law	HCF - Human Development, Counseling, and Family Studies	PHY - Physics
CHE - Chemical Engineering	HSS - Human Science and Services	PLP - Plant Pathology-Entomology
CHM - Chemistry	IDE - Industrial Engineering	PLS - Plant Science
CVE - Civil and Environmental Engineering	INS - Insurance	PSC - Political Science
CLA - Classics	IRE - Irish	POR - Portuguese
CLS - Comparative Literature Studies	ITL - Italian	PSY - Psychology
CMS - Communication Skills	JOR - Journalism	RCR - Recreation
CMD - Communicative Disorders	LRS - Labor Studies and Labor Relations	RDE - Resource Development Education
CPL - Community Planning	LAN - Languages	REN - Resource Economics
CSC - Computer Science	LAT - Latin	REM - Resource Mechanics
CNS - Consumer Studies	LAS - Latin American Studies	RTH - Respiratory Therapy
DHY - Dental Hygiene	LIB - Library	RUS - Russian
ECN - Economics	LSC - Library Science	SWF - Social Welfare
EDC - Education	LIN - Linguistics	SOC - Sociology
ELE - Electrical Engineering	MGT - Management	SPA - Spanish
EGR - Engineering	MGS - Management Science	SPE - Speech Communication
ENG - English	MKT - Marketing	TMD - Textiles, Fashion Merchandising and Design
EHS - Environmental Health Science	MTH - Mathematics	THE - Theatre
EST - Experimental Statistics	MCE - Mechanical Engineering and Applied Mechanics	UYA - University Year for Action Internship Program
FIN - Finance	MTC - Medical Technology	URB - Urban Affairs
FMT - Fisheries and Marine Technology	MCH - Medicinal Chemistry	WMS - Women's Studies
FSN - Food Science and Technology, Nutrition and Dietetics	MIC - Microbiology	WRT - Writing
	MSC - Military Science	ZOO - Zoology
	MUS - Music	

All permanent undergraduate courses offered at the University of Rhode Island are listed on the following pages by subject in alphabetical order. If any subject cannot be located readily, refer to the index. Courses numbered 001 to 099 are pre-freshman and special undergraduate courses and do not carry bachelor's degree credit. Those numbered 100 to 299 are lower division undergraduate courses and those numbered 300 to 399 are upper division undergraduate courses. The 400-level courses are generally limited to juniors and seniors majoring in a field, but open to other advanced undergraduates and to graduate students with permission.

The 500-level courses, listed in this bulletin by title line only, are graduate courses with a bachelor's degree usually prerequisite, but qualified seniors and honors students are admitted with permission. For a full description of these and courses at the 600- and 900-levels, see the Graduate School Bulletin.

Courses with two numbers, e.g. ACC 201, 202, indicate a year's sequence and the first course is either a prerequisite for the second or at least the two cannot be taken in reverse order without special permission. If a course is also offered by another department, this information appears following the course number. The roman numeral indicates the semester the course will be offered, SS means the course is offered during the Summer Session, the arabic numeral indicates the credit hours. Distribution of class hours each week is in parentheses. S/U credit signifies a course in which only satisfactory or unsatisfactory grades are given. The instructor's name follows the course description. Courses which meet the General Education requirements are designated with a letter in parentheses, indicating the appropriate group, as follows:

- (A) - Fine Arts and Literature
- (F) - Foreign Language and Culture
- (L) - Letters
- (C) - English Communication (General)
- (Cw) - English Communication (Written)
- (M) - Mathematics
- (N) - Natural Sciences
- (S) - Social Sciences

The schedule of courses is issued by the Registrar immediately before the preregistration period for each semester

and again just before registration day. The schedule of courses lists the specific courses to be offered that semester with the time of meeting, location, and instructor assigned for the section.

## Accounting (ACC)

Chairperson: Associate Professor Schwarzbach

**201, 202 Elementary Accounting (I and II, 3 each)** 201: Basic functions and principles of accounting. 202: Partnerships, corporations, manufacturing accounts, and specialized areas. (Lec. 3) Staff

**305 Accounting Principles (I and II, 3)** Basic principles and procedures, emphasis on their application to industrial administration of business enterprises. (Lec. 3) Open to non-business students only. Not open to students who have taken or are required to take 201. Staff

**311, 312 Intermediate Accounting (I and II, 3 each)** 311: Theoretical aspects of accounting principles, emphasis on current and fixed assets and the corporate structure. 312: Continuation including investments, liabilities, financial statements, application of funds, cash flow, and price-level impacts. (Lec. 3) Pre: 202. Staff

**321 Cost Accounting (I, 3)** Cost systems including job order, process, and standard costs with emphasis on the managerial control of costs. (Lec. 3) Pre: 202. Staff

**343 A General Survey of the Federal Income Tax (II, 3)** Taxation for students with little or no previous work in accounting or business administration, emphasis on those aspects of taxation which are helpful to the individual. (Lec. 3) Not open to accounting majors. Staff

**371, 372 Directed Study in Accounting (I and II, 1-3 each)** Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. (Lec. 1-3) Pre: permission of instructor. Staff

**413 Contemporary Accounting Issues (II, 3)** Interpretation of financial data. Case studies of current accounting theory in selected annual corporate reports. Pre: 312 or permission of instructor. Not for graduate program credit. Staff

**415 Accounting-Computer Systems (I and II, 3)** Accounting information systems and use of the computer for decision-making; emphasis on sources of information and employment of analytical tools in solving accounting problems. (Lec. 3) Pre: 312, 321, or permission of instructor. Staff

**431 Advanced Accounting (I, 3)** Theory applicable to partnerships, installment sales, insurance, consignments, receiverships, estates and trusts, consolidated statements, and specialized accounting subjects. (Lec. 3) Pre: 312. Staff

**443 Federal Tax Accounting (II, 3)** Federal laws, regulations, and other authorities affecting taxation of individuals. (Lec. 3) Pre: 202. Staff

**461 Auditing (I, 3)** Auditing standards, procedures, programs, working papers, and internal control. (Lec. 3) Pre: 312. Staff

**510 Financial Accounting (I or II, 3)**

**513 Accounting Systems (I, 3)**

**535 Advanced Problems in Accounting (II, 3)**

**544 Taxation of Corporations and Shareholders (II, 3)**

**548 Accounting for Noncommercial Entities (II, 3)**

## Adult and Extension Education (ADE)

Program Director: Professor McCreight

**487 The Cooperative Extension Service in Today's Society (II, 3)** Comprehensive look at the Cooperative Extension Service including its history, structure, philosophy, purpose, goals and objectives, program planning process, changing clientele, funding, methods, and procedures. Role of the modern Cooperative Extension Service in the United States. (Lec. 3) Dvorak

**488 Methods and Materials for Adult and Extension Education (I and II, 3)** Techniques utilized in working with large and small groups. Hardware and software used effectively in adult and extension education identified and demonstrated. Communications in extension education studied in depth. (Lec. 3) Mallilo

**492 Special Problems in Adult Education (I and II, 1-3 each)** Specialized problems in adult and extension education. Seminars or supervised individual projects. (Lec. or Lab.) Pre: permission of instructor. Staff

**575 Adult and Cooperative Extension Programming for Older Adults (I, 3)**

## African and Afro-American Studies (AAF)

Director: M. Hendrix

**101 Introduction to African and Afro-American Studies: Concepts** (I and II, 3) Introduces students to some of the pivotal themes and areas of exploration in African and Afro-American Studies and to the conceptual and methodological issues raised in the social sciences and the humanities by the study and analysis of the African-American experience. Hendrix and Staff (S)

**102 Introduction to African and Afro-American Studies: Issues** (I and II, 3) Focus on contemporary expressions of the African-American experience. Emphasis on issues, research, and meaning to the social, political, and economic development of peoples of African descent. Hendrix and Staff (S)

**250 (or APG 250) Africanity** (I and II, 3) Multidisciplinary survey that seeks to analyze the factors of unity and diversity of African culture through the examination of language, art, music, belief systems, world views and social organizations within various African civilizations. Hendrix, Milburn, and Pollnac (F)

**390 Directed Study or Research** (I and II, 3) Directed study arranged to meet the needs of individual students who desire independent work and to promote collective research efforts in African and Afro-American Studies. Pre: permission of director. Hendrix and Staff

**410 (or PSC 410) Issues in African Development** (I or II, 3) A seminar focusing on the dynamics of African development, including political and social change, economic development, education, urbanization, rural development, environmental management, labor and business, industrialization, and technology transfer. Pre: APG 313 or PSC 201 or HIS 388 or permission of instructor. Milburn and Hendrix

## Animal and Veterinary Science (AVS)

Chairperson: Associate Professor Gray

**101 Introduction to Animal Science** (I, 3) Animal industry's role in world and national economy; inheritance, growth, physiology, nutrition, and diseases of domestic animals and poultry; geographic distribution and marketing of animal products. (Lec. 3) Nippo (N)

**102 Introduction to Animal Science Laboratory** (I, 1) Laboratory and demonstrations of principles of the animal industries. (Lab. 2) Pre: 101. May be taken concurrently with 101. Millar and Staff

**104 Animal Management Techniques** (II, 2) Lecture and laboratory in the handling skills needed to maintain animal comfort and productivity. (Lec. 1, Lab. 2) Pre: 101, 102. Staff

**201 Man and His Animals** (II, 3) Study of the interrelationships between man and domestic animals with emphasis on pets; including breeds of dogs and cats, pet nutrition, behavior, breeding, and areas of topical interest. (Lec. 3) Nippo

**212 Feeds and Feeding** (I, 3) Principles and practices of feeding farm animals, nutrient requirements, physiology of digestion, identification and comparative value of feeds, computer calculation of rations for livestock. (Lec. 2, Lab. 2) Millar

**301, 302 Seminar in Animal and Veterinary Science** (I and II, 1) Readings, reports, lectures, and discussions on scientific topics in animal and veterinary science. Subject matter adapted to student and faculty interest. Pre: junior or senior standing. Nippo

**323 Animal Management I** (I, 3) Principles of care and management of domesticated ruminant animals including dairy cattle, beef cattle, sheep, and goats. Emphasis on the production methods of the animal industries. Participation in field trips required. Gray

**324 Animal Management II** (II, 3) Principles of the care and management of domesticated monogastric animals including swine, horses, and poultry. Emphasis will be given to modern production methods. Participation in field trips required. Millar and Rhodes

**331 Anatomy and Physiology** (I, 3) Fundamentals of anatomy and physiology of domesticated animals. (Lec. 3) Pre: ZOO 111, junior standing. Rhodes

**332 Animal Diseases** (II, 3) Specific diseases of avian and mammalian species; etiology, symptoms, and control. Pre: 331. Chang

**343 Behavior of Animals that Serve Man** (II, 3) Examination of the basis for, and exhibition and control of behavioral patterns of domestic animals. (Lec. 3) Pre: 101 or permission of instructor. Nippo

**361 Game Bird Propagation and Management** (I, 3) Principles and techniques of game bird propagation, hatchery operation, confinement rearing, nutrition, disease problems, and shooting preserve management. (Lec. 2, Lab. 2) Pre: BIO 102 or ZOO 111. Millar

**365 Laboratory Animal Technology** (I, 3) Management of laboratory animals with emphasis on animal biology, breeding, care, health, research use, and animal welfare. (Lec. 2, Lab. 2) Pre: ZOO 111 or BIO-102A. Gray

**372 Introductory Endocrinology** (I, 3) Morphology and physiology of endocrine

glands. Roles of hormones in regulation of body processes. Discussion of all endocrine organs and relationship of endocrine and nervous systems. Emphasis on domesticated animals and fowl. (Lec. 3) Pre: BIO 102 or ZOO 111. Rhodes

**382 Poultry Business** (II, 3) Poultry enterprises, methods of organization, financing, business management; emphasis on current developments within the industry affecting business decisions. (Lec. 2, Lab. 2) In alternate years, next offered 1985-86. Millar

**399 Animal Science Internship** (I and II, 1-6) Options in various professional experience programs involving the animal and veterinary sciences. May be repeated to a maximum of six credits. Pre: permission of department. S/U credit. Staff

**412 Animal Nutrition** (II, 3) Principles of animal nutrition, metabolism of carbohydrates, proteins, and fats; mineral and vitamin requirements; nutritive requirements for maintenance, growth, reproduction, lactation, and work. (Lec. 3) Pre: 212, organic chemistry, junior standing. Nippo

**415 Physiology of Lactation** (I, 3) Endocrine control, milk precursors, physiology of milk production, and anatomy of mammary system including vascular, lymphatic and nervous system. (Lec. 3) Pre: junior standing. In alternate years, next offered 1984-85. Rhodes

**420 Animal Breeding and Genetics** (II, 3) Scientific methods for the genetic improvement of domesticated animals. Genetic variation and expected results of different types of selection and mating systems. (Lec. 3) Pre: 352 or equivalent. In alternate years, next offered 1985-86. Gray

**432 Biology of the Fowl** (II, 3) Anatomy and physiology of the developing and adult domestic fowl, emphasizing characteristics of greatest economic interest, embryology, meat and egg production. Physiological responses to environmental conditions and their influences on commercial production. (Lec. 2, Lab. 2) Pre: ZOO 111 or BIO 102, 1 semester of organic chemistry. In alternate years, next offered 1984-85. Durfee  
AVS 461

**462 Laboratory Animal Techniques** (II, 3) Laboratory animal applications in clinical studies; research in nutrition, endocrinology, and other selected topics. (Lec. 1, Lab. 4) Pre: 365 or permission of instructor. Gray

**463 Animal Veterinary Technology** (II, 3) Theory and application of animal health practices required of paraprofessionals in a veterinary practice. The role of the veterinary assistant in a modern clinical practice will be emphasized. (Lec. 2, Lab. 3) Pre: 331 or permission of instructor. Staff



**472 Physiology of Reproduction (II, 3)** Anatomy and physiology of reproduction, emphasis on domestic farm animals and fowl. Endocrine aspect of reproduction. (Lec. 2, Lab. 2) Pre: ZOO 111 and permission of instructor. Rhodes

**491, 492 Special Projects (I and II, 1-3 each)** Work which meets individual needs of students in aquaculture, animal, poultry, and food science. (Lec. and/or Lab. according to nature of project) Pre: permission of department. Staff

**501, 502 Graduate Seminar (I and II, 1 each)**

**510 Recent Advances in Domestic Animal Physiology (II, 2)**

**512 Advanced Animal Nutrition (II, 3)**

**542 Advances in Animal Virology (II, 2)**

**591, 592 Research Problems (I and II, 3 each)**

## Anthropology (APG)

Chairperson: Professor Carroll (Sociology and Anthropology)

**200 Language and Culture (I or II, 3)** Cross-cultural survey of the interaction of culture and language. Introduction to various fields of linguistic research emphasizing descriptive and semantic investigations. Linguistic studies used as illustrative material. (Lec. 3) Pollnac (S)

**201 Human Origins (I and II, 3)** The biocultural evolution of humans; review of the fossil record. (Lec. 3) Loy (N)

**202 The Prehistoric Ages (I and II, 3)** Archaeological perspectives on human biological and cultural development from the Old Stone Age to the Iron Age. Emphasizes prehistoric lifeways, emergence of food production, earliest Old and New World civilizations. (Lec. 3) Turnbaugh (S)

**203 Cultural Anthropology (I and II, 3)** Anthropological approaches to the study of people and cultures around the world. (Lec. 3) Staff (S)

✓ **250 Africanity**  
See African and Afro-American Studies 250.

**300 Paleoanthropology (I, 3)** Investigation into the biocultural evolution of hominids over the last 15 million years; course based on evidence from fossil bones, teeth, and paleoecological reconstruction. (Lec. 3) Pre: 201 or 202 or permission of instructor. Kelley

**301 Comparative Primate Morphology (I, 3)** Survey of the form and structure of living and fossil primates, including humans. Examination of correlations between morphology and locomotor pattern, feeding

ecology, and habitat preference. Laboratory study of primate material. (Lec. 2, Lab. 2) Pre: 201 or permission of instructor. Loy

**302 Methods of Anthropological Inquiry (I or II, 3)** Logic, techniques, and problems in obtaining true information in anthropological inquiry. Problems from anthropological field work and use of cross-cultural data. (Lec. 3) Pre: 203 and two 300-level courses in anthropology or permission of department. In alternate years, next offered in 1985-86. Poggie

**303 New World Prehistory (I or II, 3)** Reconstruction of American Indian culture history from earliest times to the period of European discovery and colonization, using archaeological evidence and perspectives. (Lec. 3) Turnbaugh (F)

**305 Peoples of East Asia (I or II, 3)** Survey of traditional and contemporary culture and society in the three main countries (China, Korea, and Japan) of the East Asia culture area. (Lec. 3) Pre: 203 or permission of instructor. Staff

**309 Anthropology of Religion (I or II, 3)** Religious systems of selected peoples around the world; examination of theories concerning the origins, functions, and natures of these religions. (Lec. 3) Pre: 203 or permission of instructor. Staff

**311 Native North Americans (I or II, 3)** Survey of selected North American Indian groups from before European contact to the present. Modern reservation life; influence of the federal government on Indian life. (Lec. 3) Pre: 203 or permission of instructor. Lynch (F)

**313 Ethnology of Africa (I or II, 3)** Studies of Africa's peoples and cultures from prehistoric times to the present. (Lec. 3) Pre: 203 or permission of instructor. Pollnac (F)

**315 Cultures and Societies of Latin America (I or II, 3)** Contemporary cultures and societies, emphasis on adjustment of the people to modern social and economic changes. (Lec. 3) Pre: 203 or permission of instructor. Poggie (F)

**317 Archaeological Method and Theory (I or II, 3)** Problems of collection and interpretation of data, emphasizing nature of archaeological investigation, classification, dating, reconstruction of social contexts. Laboratory demonstrations. (Lec. 3) In alternate years, next offered 1984-85. Turnbaugh

**319 Cultural Behavior and Environment (I or II, 3)** Cultural adaptations made by traditional and industrial societies to natural and human environments using examples from prehistory and ethnography. (Lec. 3) Pre: 201, 202, or 203 or permission of instructor. In alternate years, next offered 1985-86. Turnbaugh (S)

**321 Kinship and Marriage (I or II, 3)** Examination of the role of kinship, marriage, and ancestry in the social organization of societies around the world. (Lec. 3) Pre: 203. Lynch

**322 Anthropology of Modernization (I or II, 3)** Patterns and processes of contemporary social and cultural change among traditional people. (Lec. 3) Pre: 203 or permission of instructor. Poggie

**323 Political Anthropology (I or II, 3)** Evolution of political systems from tribe to state; political conflict, authority, and power in selected societies around the world. (Lec. 3) Pre: 203 or permission of instructor. Lynch

**324 Peasant Societies (I or II, 3)** Evolutionary development and sociocultural characteristics of the world's peasantry. Case studies of adaptations of peasants to a variety of ecological settings. (Lec. 3) Pre: 203 or permission of instructor. Poggie

**325 The Irish (I, 3)** An examination of the beliefs, customs, and social institutions which comprise Irish life, at home and abroad. (Lec. 3) Pre: 203 or permission of instructor. Lynch (F)

**326 Anthropology of Law (I or II, 3)** Examination of the range of procedures for handling disputes in selected societies around the world. Emphasis on relation of law to its cultural context. (Lec. 3) Pre: 203 or permission of instructor. Lynch

✓ **390 Human Sociobiology and Ethology**  
See Sociology 390.

**400 Bones, Mummies, and Disease (II, 3)** Examines the role of diseases such as syphilis, tuberculosis, leprosy, cancer, and dietary deficiencies in shaping the evolution of human populations. (Lec. 3) Pre: introductory physical anthropology, biology or zoology or permission of instructor. Kelley

**401 History of Anthropological Theory (I or II, 3)** Theory from the sixteenth century to the present; readings from Tylor, Morgan, Boas, Sapir, Kroeber, Benedict, Malinowski and Radcliffe-Brown. (Lec. 3) Pre: 203 and two 300-level courses in anthropology or permission of department. In alternate years, next offered in 1984-85. Staff

**405 Psychological Anthropology (I or II, 3)** Study of human behavior in different cultures employing psychological concepts and theories. (Lec. 3) Pre: 203 and 6 credits of 300-level courses in anthropology or permission of department. Pollnac

**407 Economic Anthropology (I or II, 3)** Introduction to theoretical concepts and methodologies used in analysis of tribal and peasant economies, emphasis on case studies from the anthropological literature. (Lec. 3) Pre: 203. Staff

**409 Anthropological Linguistics (I or II, 3)** Use of the linguistic model in the analysis of human cultural products, including folk narrative and kinship systems. Emphasis on techniques used in the formal analysis of both verbal and non-verbal behavior. (Lec. 3) Pre: 200 or LIN 201. Pollnac

**412 Primate Behavior and Organization (I or II, 3)** Investigation of the naturalistic behavior and organization of nonhuman primates, and the relationship of primate data to anthropology. (Lec. 3) Pre: 201 or permission of instructor. Loy

**413 (or GMA 413) Peoples of the Sea (I, 3)** Examination of human sociocultural adaptation to the seas. (Lec. 3) Pre: 203 or permission of instructor. Pollnac and Poggie

**470 Problems in Anthropology (I and II, 3)** Staff-guided study and research, seminar, or individual program. (Lec. 3 or Lab. 6) Pre: permission of department. Staff

## Aquacultural Science and Pathology (ASP)

Chairperson: Professor Meade (Fisheries, Aquaculture and Pathology)

**281 Introduction to Aquaculture (I, 3)** Aquaculture, its contribution to world food supply, methods of production, environmental and ecological considerations, cultural practices employed for selected species, selective breeding, feeding, disease, processing and marketing. (Lec. 3) Pre: BIO 102 or ZOO 111, or permission of instructor. Durfee

**352 General Genetics (I, 3)** Introduction to genetic principles and concepts with applications and implications of these concepts to man and other species. (Lec. 3) Pre: BOT 111, or BIO 101 or 102 or ZOO 111. Not open to students who have taken BOT 352. Smith

**354 Genetics Laboratory (I, 2)** Basic principles of heredity demonstrated with *Drosophila*, *Coturnix*, and plants. (Lab. 4) Pre: 352 or BOT 352, may be taken concurrently with 352. Not open to students who have taken BOT 354 or 454. Smith

**401 Introduction to Pathology (II, 3)** General and systemic pathology including cellular changes, etiology and pathogenesis of inflammation, metabolic and neoplastic processes. (Lec. 3) Pre: MIC 201 or 211, ZOO 242, and/or equivalent; junior standing, or permission of instructor. Wolke

**452 (or FMT 452) Industrial Fishery Technology (I, 3)** Utilization of industrial fish, production of fish meal, fish oil, condensed fish solubles, fish protein concentrate; handling, packaging, storage, and transportation. Nutritive quality, market value, and demand relationships for fish proteins. (Lec. 2, Lab. 3) Pre: permission of instructor. Meade

**461 Laboratory Animal Technology**  
See Animal and Veterinary Science 461.

**476 The Genetics of Fish (II, 3)** Modes of inheritance found in fish including chromosome number, polyploidy, sex determination and hybridization. Heritabilities, methods of selection, and mating systems used in the development of fish suited for intensive culture. (Lec. 2) Pre: 352. Smith

**483 Salmonid Aquaculture (I, 3)** Principles of salmonid aquaculture, including culturing, spawning, incubation, feed formulation and feeding, disease control, genetics, systems management, harvesting, and transport. (Lec. 2, Lab. 2) Pre: 281 or equivalent, or permission of instructor. Meade

**501, 502 Seminar (I and II, 1 each)**

**532 Experiment Design (II, 3)**

**534 Animal Virology (II, 3)**

**536 Virology Laboratory (II, 2)**

**538 Epidemiology of Viral and Rickettsial Diseases (II, 2)**

**555, 556 Pathology Rotation (I, II, 3 each)**

**584 Advanced Aquaculture Systems (II, 3)**

**586 Fish Nutrition (I, 3)**

**591, 592, Special Projects (I and II, 1-3 each)**

## Art (ART)

Chairperson: Associate Professor Onorato

**101 Two-dimensional Studio I (I and II, 3)** Exploration of principles of visual organization relating primarily to formulations on the two-dimensional surface by means of fundamental studies and assignments in studio techniques. (Studio 6) Staff (A)

**103 Three-dimensional Studio I (I and II, 3)** Introduction to problems in three-dimensional organization. Observations from objects with discussion and application to simple mold and casting techniques. Introduction to the use of basic materials, clay, plaster, and wood. (Studio 6) Staff (A)

**120 Introduction to Art (I and II, 3)** Fundamental principles of the visual arts, evolution of styles and conceptions through the ages in different forms of creative expression. (Lec. 3) Holmes (A)

**203 Color (II, 3)** Visual perception of color and manipulation of light as they pertain to two- or three-dimensional formulations. (Studio 6) Leete (A)

**207 Drawing I (I and II, 3)** Visual perception and observation, using nature structures, drawing from live models, still life and landscape; exercises in basic drawing techniques and principles. (Studio 6) Staff (A)

**208 Drawing II (I and II, 3)** Advanced practice in graphic conceptions; exercises in spatial problems, organizing relationships of abstract forms and structures; advanced drawing media. (Studio 6) Pre: 207. Staff

**213 Photography I (I and II, 3)** Introduction to photography, exploration of related techniques using light sensitive materials. (Studio 6) May be repeated once with permission of instructor. Pre: permission of instructor. Parker

**215 Filmmaking I (I and II, 3)** Introduction to basic filmmaking technique and theory. Emphasis on film as a visual art. Required projects and readings. (Studio 6) May be repeated once with permission of instructor. May be taken once for general education credit. Keller (A)

**221 Two-dimensional Studio II (I and II, 3)** Techniques of painting, utilizing as reference the natural and manmade environments. Traditional and contemporary materials. (Studio 6) Pre: 101 and 207. Staff

**231 Printmaking I (I and II, 3)** Introduction to intaglio and lithographic processes, with an emphasis on image development and workshop procedures. (Studio 6) Pre: 101 or 207 or permission of instructor. Cordes (A)

**233 Relief Printing and Typography I (I and II, 3)** Introduction to basic elements of graphic design; letter forms, their relationship to the page and to the image. Various traditional and modern reproduction techniques, workshop practice in typesetting and layout. (Studio 6) Pre: 101 or permission of department. Richman (A)

**243 Three-dimensional Studio II (I and II, 3)** Formation of three-dimensional forms employing basic sculptural materials and techniques. Basic media, emphasis on form, material, and structural means in studio practice. (Studio 6) Pre: 103 or permission of instructor. Staff

**251 Introduction to History of Art (I and II, 3)** The development of architecture, sculpture, and painting from prehistory through the Middle Ages. (Lec. 3) Staff (A)

**252 Introduction to History of Art (I and II, 3)** The development of architecture, sculpture and painting from the early Renaissance to the present. (Lec. 3) Staff (A)

**263 American Art (I or II, 3)** Painting, sculpture and architecture from their origins in the seventeenth century to the present; emphasis on the nineteenth century. (Lec. 3) Onorato (A)

**264 Modern British Art (I or II, 3)** A survey of painting, sculpture, architecture, and design in Britain from c. 1780 to the present with emphasis on the historical and cultural background. (Lec. 3) Roworth (F)

**265 Modern French Art—Nineteenth and Twentieth Centuries (I or II, 3)** Painting and sculpture in France from 1789 to 1950, with emphasis on the social background and relationships with other art forms. (Lec. 3) In alternate years. Holmes (A) (F)

**280 Introductory Topics in European and American Art (I or II, 3)** Consideration of the history of European and American art through surveys of particular periods or themes. Topics to be announced. (Lec. 3) May be repeated twice with permission of instructor. May be taken once for general education credit. Staff (A)

**284 Introductory Topics in Architectural History (I or II, 3)** Consideration of the history of architecture and city planning through surveys of selected periods and themes. (Lec. 3) May be repeated once with permission of instructor. May be taken once for general education credit. Kampen (A)

**285 Women in Art (I, 3)** Survey of images of women throughout the history of art in Europe and America; investigation of the roles of women as patrons and artists in art history. (Lec. 3) Kampen (A)

**301, 302 Projects in Studio I, II (I and II, 3 each)** Studio projects under guidance of instructor selected by student. The student may select another instructor for 302. Pre: enrollment in Honors Colloquium and/or permission of chairperson and instructor. Staff

**303 Topics in Studio (I or II, 3)** Selected topics based on particular materials, techniques, or thematic premises. Topics and semesters to be announced. (Studio 6) May be repeated with permission of instructor and department chairperson. Pre: permission of instructor. Staff

**309, 310 Drawing III and IV (I and II, 3 each)** 309: Further problems, emphasis on independent investigation in analysis, planning, and supportive notation. 310: Continuation. (Studio 6) 310 may be repeated with permission of instructor. Pre: 208 or permission of instructor for 309; 309 for 310. Staff

**314 Photography II (I and II, 3)** Continuation of 213. (Studio 6) May be repeated with permission of instructor. Pre: 213. Parker

**316 Filmmaking II (I and II, 3)** Continuation of 215 with added emphasis on sound. Required projects and reading. (Studio 6) Pre: 215. May be repeated with permission of instructor. Keller

**322 Two-dimensional Studio III (I and II, 3)** Continuation of 221. (Studio 6) Pre: 221. May be repeated with permission of instructor. Staff

**332 Printmaking II (I and II, 3)** Continuation of 231 with introduction to color lithography. Contemporary viewpoints and their relationship to traditional printmaking, with emphasis on individual image development. (Studio 6) Pre: 231. Cordes

**334 Relief Printing and Typography II (I and II, 3)** Continuation of 233. Applications of previous studies to experimental workshop assignments leading to production of book pages, folders, posters, and other visual material incorporating type and print in a contemporary idiom. (Studio 6) May be repeated with permission of instructor. Pre: 233 or permission of department. Richman

**337 Printmaking III (I and II, 3)** Semi-independent work in printmaking media. Introduction of aluminum plate and photolithography. (Studio 6) Pre: 332. Cordes

**338 Printmaking IV (I and II, 3)** Emphasis on individual development in specific printmaking media. Critical evaluation of visual development. (Studio 6) Pre: 337. Cordes

**344 Three-dimensional Studio III (I and II, 3)** Continuation of 243. (Studio 6) May be repeated with permission of instructor. Pre: 243 or permission of instructor. Staff

**354 The Art of Greece and Rome (I, 3)** Developments in architecture, painting, and sculpture in Greece and Rome from 800 B.C. to 400 A.D. Brief analysis of the art of the Aegean from 2500 to 1500 B.C. (Lec. 3) Pre: 251 or permission of department. Kampen (F)

**356 Medieval Art (II, 3)** Painting, sculpture, architecture, and minor arts of the Middle Ages from 500 to 1400 in Western Europe. (Lec. 3) Pre: 251 or permission of department. Kampen (F)

**359 Baroque Art (II, 3)** Developments in painting, sculpture, and architecture in Italy and Northern Europe from 1600 to 1750. (Lec. 3) Pre: 251, 252 or permission of department. Staff (A)(F)

**363 Modern Art—Nineteenth and Twentieth Centuries (I or II, 3)** A survey of trends in the visual arts over the last two centuries with emphasis on defining a "modern" aesthetic. Painting, sculpture, performance, conceptual, and related arts will be discussed. (Lec. 3) Pre: 251 or 252 or permission of instructor. Onorato (F)

**365 Renaissance Art (I, 3)** Painting, sculpture, and architecture of Italy and northern Europe from 1400 to 1600. (Lec. 3) Pre: 251 or 252 or permission of department. Roworth (F)

**371, 372 Projects in Art History I, II (I and II, 3 each)** Directed study in art history under guidance of instructor selected by student. The student may select another instructor for 372. Pre: enrollment in Honors Colloquium and/or permission of chairperson and instructor; 371 for 372. Staff

**374 Topics in Film and Photography (II, 3)** Selected topics or periods in the history of film and photography. Topics to be announced. (Lec. 3) Pre: permission of department. May be repeated twice with permission of instructor. May be taken once for general education credit. Staff (A)

**405, 406 Studio-Seminar (I and II, 3 each)** Intensive self-directed work under guidance of instructors. Periodic critiques and discussions of work of all participants. (Studio 6) Pre: 24 credits in studio for 405; 405 for 406. Staff

**461 Topics in Methods, Theory and Criticism (I or II, 3)** Art history methods or selected topics in the theory and criticism of art. Topics to be announced. (Lec. 3) Pre: permission of department. May be repeated once with permission of instructor. Staff

**462 Contemporary Art Seminar: Art Since 1945 (II, 3)** Analysis of contemporary work and its relation to earlier movements. (Lec. 3) Pre: 362 or permission of department. Onorato

**469, 470 Art History—Senior Projects (I and II, 3-6 each)** Intensive, independent work on a project determined after consultation with the student's project adviser. (Lec. 3-6) Pre: permission of department. Staff

**480 Advanced Topics in European and American Art (I or II, 3)** Consideration of the history of European and American art through analysis of selected periods or themes. (Lec. 3) Pre: permission of department. Staff

**501, 502 Graduate Studio Seminar I and II (I and II, 3 each)**



## Astronomy (AST)

Chairperson: Professor Pickart (Physics)

**108 Introductory Astronomy (I and II, 3)**  
Celestial sphere, earth as an astronomical body, sun, motions and characteristics of members of solar system, constellations, constitution of stars and nebulae. Planetarium used freely for lectures and demonstration. (Lec. 3) Penhallow (N)

✓ **334 Optics**  
See Physics 334.

✓ **406 Atmospheric Physics I**  
See Physics 406.

✓ **407 Atmospheric Physics II**  
See Physics 407.

**408 Introduction to Astrophysics (II, 3)**  
Application of photometry and spectroscopy to stellar composition, structure, and evolution. Radio astronomy and the structure of our galaxy. Energy production in stars and galaxies. Observational cosmology. (Lec. 3) Pre: PHY 112 or 214. 108 is recommended but not required. Penhallow

✓ **484 Laboratory and Research Problems in Physics**  
See Physics 484.

✓ **491, 492 Special Problems**  
See Physics 491, 492.

## Bachelor of General Studies (BGS)

Coordinator: Associate Professor Roughton

**100 Pro-Seminar (I or II, 4)** Introduction to critical approaches to learning with emphasis on reading and rhetorical skills appropriate to college students. Required of BGS students. S/U credit. Staff (Cw)

**390 Social Science Seminar (I or II, 6)**  
Exploration of the social sciences for BGS students who have completed the Pro-Seminar, started their major, and have the consent of their adviser. Required of all BGS students. Staff (S)

**391 Natural Science Seminar (I or II, 6)**  
Exploration of the natural sciences for BGS students who have completed the Pro-Seminar, started their major, and have the consent of their adviser. Required of all BGS students. Staff (N)

**392 Humanities Seminar (I or II, 6)** Exploration of the humanities for BGS students who have completed their Pro-Seminar, started their major, and have the consent of their adviser. Required of all BGS students. Staff (L)

**397 Human Studies Major Seminar (I or II, 3)**  
Capstone course of Human Studies major. Review and assessment of students' major education through intensive exploration of issues central to Human Studies. Required of all BGS Human Studies majors. Pre: completion of 30 credits of major. Staff

**399 Supervised Senior Project (I and II, 3)**  
A project chosen by the student with faculty guidance on a topic relevant to the student's major, resulting in a paper or other demonstration of academic achievement. Required of BGS students. Pre: senior standing in BGS program and approval of faculty supervisor. Staff

## Biochemistry and Biophysics (BCP)

Chairperson: Professor Fisher

**302 The Molecular Basis of Life (II, 3)**  
Molecular basis of life as a key to origin of life, evolution, expression of genetic information, biological control. For the non-biology major interested in an overall view of biology at the molecular level. (Lec. 3) Pre: junior standing. Fisher

**311 Introductory Biochemistry (I and II, 3)**  
Chemistry of biological transformations in the cell. Chemistry of carbohydrates, fats, proteins, nucleic acids, enzymes, vitamins, and hormones integrated into a general discussion of the energy-yielding biosynthetic reaction in the cell. (Lec. 3) Pre: CHM 124 or equivalent. Staff

✓ **401 (or MIC 401) Quantitative Cell Culture (I, 3)** Methods of mammalian cell culture to examine the normal and abnormal cell in the study of cancer, genetic diseases, the radiation syndrome, nutrition, and other problems. (Lec. 3) Pre: any two of the following: BIO 101, 102, BOT 111, ZOO 111 or MIC 210; senior standing or above. Fisher

✓ **403 (or MIC 403) Introduction to Electron Microscopy (I, 2)** Survey of techniques in electron microscopy. Discussion of advantages and limitations. Thin sectioning, negative staining, shadow-casting, freezing-etching, histochemical procedures, autoradiology, darkroom procedures, scanning electron microscopy, interpretation of electron micrographs. (Lec. 2) Pre: permission of department. Fisher and Hufnagel

✓ **405 Electron Microscopy Laboratory**  
See Microbiology 405.

**411 Biochemistry Laboratory (II, 3)**  
Biochemical approach to biological research including a biological problem in metabolism at the level of enzymology. Effect of an alteration of the hormonal or nutritional status of an organism on enzyme-

systems evaluated. Instruments and biochemical methods. (Lec. 1, Lab. 4) Pre: 311 or equivalent and permission of department. Tremblay

**435 Physical Chemistry for Life Sciences (I, 3)** Gases, solution, thermodynamics, equilibrium, kinetics, quantum theory and photochemistry. (Lec. 3) Pre: one semester each of organic chemistry, physics, and calculus (two semesters of each recommended). Not open to students majoring in chemistry. Hartman

**491, 492 Research in Biochemistry and Biophysics (I and II, 1-6 each)** Special problems. Student outlines the problem, carries on experimental work, presents the conclusions in a report. (Lab. 2 to 12) Pre: permission of instructor. Not for graduate credit. Staff

**521 Physical Biochemistry (II, 3)**  
**523, 524 Special Topics in Biochemistry and Biophysics (I and II, 1-6 each)**  
**541, 542 Laboratory Techniques in Biochemistry (I and II, 3 each)**  
**572 (or PLS 572) Plant Biochemistry (I, 3)**  
**581, 582 General Biochemistry (I and II, 3 each)**  
**595, 596 Seminar in Biochemistry and Biophysics (I and II, 1 each)**

## Biology (BIO)

Chairpersons: Professor Goos (Botany) and Professor Wilde (Zoology)

**101 Biology of Plants (I and II, 3)** Introduction to major concepts of biology through a study of plants, including structure, function, reproduction, inheritance, ecology, and topics of current interest. Designed for non-science majors. (Lec. 2, Lab/Rec. 1) Not open to students who have passed BOT 111. Albert or Koske (N)

**102A General Animal Biology (I and II, 3)**  
Introduction to life processes of animals, including man. Examines biological aspects of inheritance, ecology, behavior, animal survey, and regulation of biosystems. Laboratory surveys general concepts of animal biology. (Lec. 2, Lab. 2) Farish and Goldsmith (N)

**102B General Animal Biology (Special Sections) (I and II, 3)** Same lectures as 102A, but laboratories examine specific topics. Topics vary each semester. Previous topics included marine biology, biological creative writing, biology as art. (Lec. 2, Lab. 2) Zoology Staff

Note: Students who elect 101 may not enroll in BOT 111, and those who elect 102 may not enroll in ZOO 111.



## Botany (BOT)

Chairperson: Professor Goos

**111 General Botany (I and II, 4)** Structure, physiology, and reproduction of seed plants as a basis for understanding broad principles of biology and relation of plants to human life. Survey of plant kingdom. (Lec. 3, Lab. 2) Not open to students who have passed BIO 101. Hauke or Sheath (N)

**202 Taxonomy of Vascular Plants (II, 3)** Classes, orders, and families of vascular plants. Principles, methods, and sources of data used in classification. (Lec. 2, Lab. 3) Pre: 111 or permission of instructor. Hauke

**216 Seaweeds and Society (II, 2)** Importance of algae in the environment; their impact upon human activity and technologies. (Lec. 2) Pre: 111 or BIO 101. Harlin

**221 General Morphology (II, 3)** Representative forms of algae, fungi, bryophytes, and vascular plants with emphasis on heredity, evolution, ecology, life cycle, and plant geography. (Lec. 1, Lab. 4) Pre: 111 or permission of instructor. Hauke

**245 Plant Physiology (I, 3)** Processes underlying the physiology of the whole plant. Emphasis on fundamental principles and interrelationships of plant processes in growth and development. Pre: 111, CHM 112, or permission of instructor. Albert

✓ **262 Introductory Ecology**  
See Zoology 262.

**311 Plant Anatomy (I, 3)** Structure of vascular plant tissues and organs as it relates to their function. Variations in anatomy, phylogeny of vascular tissue, anatomy of fossils, and the relation of structure to economic value. (Lec. 1, Lab. 4) Pre: 111 or permission of instructor. Hauke

**323 Field Botany (I, 3)** Collection, identification, and study of vascular plants with emphasis on native flora of Rhode Island. Use of manuals, interpretation of morphological characters, problems in nomenclature, and herbarium technique. (Lec. 1, Lab. 5) Pre: 111 or BIO 101. Killingbeck

✓ **332 (or PLP 332) Plant Pathology: Introduction to Plant Diseases (II, 3)** Nature, cause, and control of plant diseases. Examples are taken mostly from serious diseases found in this region. (Lec. 1, Lab. 4) Pre: 111 or permission of instructor. Beckman

**352 Genetics (II, 3)** Fundamental concepts of inheritance and variation in plants, animals, bacteria, and viruses. Methods of recombination, the process of mutation, gene structure, and function. (Lec. 3) Pre: 111 and ZOO 111 or permission of instructor. Not open to students who have taken ASP 352. Mottinger

**355 Phycology: An Introduction to the Algae (II, 3)** Taxonomy, morphology, and evolution of algae. Use of ultrastructure in modern taxonomy; various systems of classification. Field trips to different communities. Labs on the taxa discussed and techniques for axenic culture. (Lec. 2, Lab. 3) Pre: 111, 221 recommended. Sheath

**395 Undergraduate Seminar in Botany (II, 1)** Introduction to sources of botanical literature. Presentation of papers by students, guest speakers, and discussion by the class. (Lec. 1) Harlin

**418 Marine Botany (I, 3)** Field and laboratory study of ecology and taxonomy of various communities of marine plants, primarily on seaweeds and seagrasses. Methods of collecting, fixation, herbarium processing, and identification. Individual projects required. (Lec. 2, Lab. 3) Pre: 355 or permission of instructor. 262 suggested. In alternate years, next offered in 1985-86. Harlin or Sheath

**419 Freshwater Botany (I, 3)** Field and laboratory study of ecology and taxonomy of various communities of freshwater microalgae, macroalgae, and higher plants. Methods of collecting, fixation, enumeration, identification, and crop estimation. Individual collections required. (Lec. 2, Lab. 3) Pre: 355 or permission of instructor. 262 suggested. In alternate years, next offered in 1984-85. Sheath

**424 Plant Ecology (II, 3)** Distinguishing, describing, and determining the composition of plant communities, with a bearing on the landscape and role of humankind as an agent for change. Literature, special projects and reports, ecological techniques, field trips. One all-day field trip. (Lec. 1, Lab. 4) Pre: 202, 262 or 323. Killingbeck

**432 Mycology: Introduction to Fungi (I, 4)** Structure, development, cytology, distribution, and identification of fungi, with consideration of their importance in industry, medicine, plant disease, and organic decomposition. (Lec. 2, Lab. 4) Pre: BIO 101 or BOT 111; 221 recommended. Goos

**433 Field Mycology (I, 3)** Basic course involving methods of collecting, preserving, and identifying fungi and the use of literature. Emphasis on higher fungi. (Lec. 1, Lab. 4) Pre: 111 or BIO 101 or equivalent. Goos

**446 Plant Stress Physiology (II, 3)** Effect of environmental factors and their extremes on the physiology, growth, and metabolism of plants. (Lec. 2, Lab. 3) Pre: 245, BCP 311 or equivalent, or permission of instructor. Albert

✓ **453 (or MIC 453) Cell Biology (II, 3)**  
Structure, replication and function of

eukaryotic cells at subcellular level. Topics considered include cell membranes, cytoplasmic organelles and nuclei, cell division, cellular differentiation, and methods. Emphasis on recent publications. (Lec. 2, Lab. 3) Pre: 2 semesters of biology, BCP 311, junior standing, or permission of instructor. Staff

**454 Advanced Genetics Lab (I, 3)** Principles of classical and molecular genetics using microorganisms as well as higher plants and animals. Experimental techniques include human chromosome preparations, screening for growth requirements in microorganisms, mutagenesis, gel electrophoresis and nucleic acid hybridization. (Lab. 6) Pre: 352. In alternate years; next offered 1984-85. Mottinger

✓ **455 Marine Ecology**  
See Zoology 455.

✓ **457 Marine Ecology Laboratory**  
See Zoology 457.

**490 Modern Techniques in Botanical Sciences (I and II, 2)** Experience using the equipment and techniques of botanical research such as radioisotopic tracers, analysis of organic and inorganic constituents, productivity, hydrobotany, cell and tissue culture, and light microscopy. (Lec. 2, Lab. 4 for six weeks). May be repeated with different topic (A—G). Pre: major in biological science, junior standing, and permission of instructor. Staff

- A Radioisotope techniques
- B Analysis of organic constituents in plant tissues
- C Analysis of inorganic nutrients and trace elements in plant tissues
- D Plant productivity and biomass analysis
- E Hydrobiological dynamics
- F Plant cell and tissue culture methods
- G Modern applications of light microscopy

**491, 492 Special Problems (I and II, 1-3 each)** Selected areas pertinent to needs of individuals or small groups. Class, seminar or tutorial situations. (Lec. 1-3 or Lab. 2-6) Offered only to undergraduates on arrangement with staff. Staff

- 511 Developmental Plant Anatomy (I, 3)**
- 512 Morphology of Vascular Plants (I, 3)**
- 521 (or MIC 521) Recent Advances in Cell Biology (I, 2)**
- 524 Methods in Plant Ecology (II, 3)**
- 534 Physiology of the Fungi (I, 3)**
- 538 Ecology of Fungi (I, 3)**
- 540 Experimental Mycology (II, 3)**
- 542 Medical Mycology (II, 3)**
- 545 Phytochrome and Photomorphogenesis (I, 2)**
- 551 Seminar in Aquatic Botany (I, 1)**
- 554 Cytogenetics (I, 4)**
- 555 Algal Cell Biology (I, 3)**
- 559 Physiological Ecology of Marine Macroalgae (I, 4)**

- 562 Seminar in Plant Ecology (II, 2)  
 579 Advanced Genetics Seminar (I and II, 1)  
 581, 582 Botany Seminar (I and II, 1 each)  
 591, 592 Botanical Problems (I and II, 1-3 each)  
 593, 594 Botanical Problems (I and II, 1-3 each)

## Business Law (BSL)

Chairperson: Professor Overton  
 (Management)

**333 Law in a Business Environment (I, 3)**  
 Contractual relations prefaced by a survey of origins, framework, and concepts of our legal system. (Lec. 3) Pre: junior standing. Open to non-business students only by permission of department. Staff

**334 Law in a Business Environment (II, 3)**  
 Operation of the system of jurisprudence as it affects agency business organizations and the sale of merchandise. (Lec. 3) Pre: 333. Open to non-business students only by permission of department. Staff

**442 Property Interests (II, 3)** Creation and transfer of personal and real property interests: suretyship and guarantee, bailments, real estate law, trusts and estates. (Lec. 3) Pre: 333 or permission of instructor. Staff

**450 Consumer Law and Legislation (I, 3)**  
 Introduction to consumer law (state and federal). Coverage includes a study of statutory law, administrative agencies, and court decisions. (Lec. 3) Pre: 333 or permission of instructor. Laviano

**501 Law and Accounting (I, 3)**

## Chemical Engineering (CHE)

Acting Chairperson: Professor Rockett

**212 Chemical Process Calculations (I, 3)**  
 Orientation to chemical engineering, material-balance computations on chemical processes, use of gas laws, vapor pressure, humidity, solubility, and crystallization. (Lec. 2, Lab. 3) Pre: CHM 112 or 192. Shilling

**272 Introduction to Chemical Engineering (II, 3)** Introduction to the use of computers and numerical methods including numerical solution of differential equations, as applied to chemical engineering. (Lec. 2, Lab. 3) Pre: 212 and MTH 243. Shilling

**313 Chemical Engineering Thermodynamics (I, 3)** Applications of the first, second and third laws of thermodynamics involving thermophysics, thermochemistry, energy balances, combustion, and properties of fluids. (Lec. 2, Lab. 3) Pre: 212 or CHM 431 and MTH 243. Gregory

**314 Chemical Engineering Thermodynamics (II, 3)** Continuation of 313 with applications to compression, refrigeration, phase and chemical equilibria. (Lec. 2, Lab. 3) Pre: 313. Gregory

**322 Chemical Process Analysis (II, 1)** Quantitative experimental studies of selected unit chemical processes and use of microprocessors in control. (Lab. 3) Pre: credit or registration in 347. Bose

**328 Industrial Plants (I, 1)** Field trips to nearby plants demonstrating various phases of chemical engineering. Written reports are required. (Lab. 3) Pre: 348. Rose

**332 Physical Metallurgy (I and II, 3)** Fundamentals of physical metallurgy as they apply particularly to the engineering metals and their alloys. Properties, characteristics and structure of metals, theory of alloys, thermal processing, and studies in corrosion. (Lec. 2, Lab. 3) Pre: CHM 101, 103 or 191. Rockett

**333 Engineering Materials (I and II, 3)** First course in engineering materials devoted largely, but not exclusively, to physical metallurgy. Includes structure and properties of pure substances and binary systems at equilibrium and, when used intentionally, at non-equilibrium. (Lec. 2, Lab. 3) Pre: junior standing or permission of instructor. Rockett

**345, 346 Chemical Engineering Laboratory (I and II, 2 each)** Quantitative studies illustrating chemical engineering principles. Emphasis on report writing and the interpretation of experimental data. (Lab. 6) Pre: 348. Shilling and Gray

**347 Transfer Operations I (I, 3)** Dimensional analysis; fluid statics; mass, energy, and momentum balances for fluid systems, boundary layers, turbulence, incompressible flow; flow through fixed beds of solids and fluidized beds; filtration. (Lec. 3) Pre: credit or registration in 313 or MCE 341. Gray

**348 Transfer Operations II (II, 3)** Heat transfer: conduction, convection, radiation. Mass transfer: distillation, liquid extraction, gas absorption; staged and differential contact. (Lec. 2, Lab. 3) Pre: 347. Knickle

**349 Transfer Operations III (I, 2)** Diffusion and mass transfer, humidification and dehumidification, water cooling, absorption and ion exchange, drying, leaching. (Lec. 2) Pre: 348. Bose

**351, 352 (or OCE 351, 352) Plant Design and Economics (I and II, 3 each)** Elements of plant design integrating the principles learned in previous courses. Emphasis is on optimum economic design and the writing of reports. (Lec. 1, Lab. 6) Pre: 314 and 348. Estrin

**391, 392 Honors Work (I and II, 1-3 each)**  
 Independent study under close faculty super-

vision. Discussion of advanced topics in chemical engineering in preparation for graduate work. Pre: junior standing or permission of department. Staff

**403, 404 (or OCE 403, 404) Introduction to Ocean Engineering Processes I and II (I and II, 3 each)** Theory and basic principles directly applicable to ocean-related processes. Desalinization, mining, combating oil spills, seawater as a coolant, seawater as a waste diluent, food processing, sulfur and petroleum production, recovery minerals. (Lec. 2, Lab. 4) Pre: permission of instructor. Barnett and Knickle

**425 Process Dynamics and Control (II, 3)** Principles involved in automatic control of processing plants. Modeling and responses of dynamic systems, feedback control. (Lec. 3) Pre: MTH 243 and ELE 211, or 220 and credit or registration in CHE 347 or MCE 354. Shilling

**437 Materials Engineering (I and II, 3)** Introduction to engineering aspects of the fundamentals of the solid state. Structural, chemical, and physical properties of engineering materials with emphasis on ceramics, polymers, and composite materials. (Lec. 3) Pre: CHM 101, 103 or 191 or permission of department. Brown

**447 (or FSN 447) Food Engineering I (I, 4)** Basic principles underlying unit operations of chemical engineering applied to food industries. Topics covered include heat transfer, fluid flow, extraction and drying. Not for credit in chemical engineering curriculum. (Lec. 3, Lab. 3) Pre: CHM 228, PHY 112, MTH 109 and permission of instructor. Barnett

**464 Industrial Reaction Kinetics (I, 3)** Modeling of simple chemical-reacting systems; computation of design parameters to satisfy system constraints and typical restraints (e.g., product rate and distribution) and conditions of optimality. (Lec. 3) Pre: 314 and CHM 432. Shilling

**471 Analysis of Engineering Data (I, 3)** Application of some of the modern mathematical techniques to the analysis of engineering data. (Lec. 3) In alternate years, next offered 1985-86. Staff

**491, 492 Special Problems (I and II, 1-6 each)** Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. (Lec. or Lab. according to nature of the problem. Credits not to exceed a total of 12.) Pre: permission of department. Not for graduate credit. Staff

**501, 502 Graduate Seminar (I and II, 1 each)**

**513 Advanced Chemical Engineering Thermodynamics (I, 3)**

- 530 **Polymer Chemistry** (I, 3)  
 531 **Polymer Engineering** (II, 3)  
 532 **Ceramic Engineering** (I, 3)  
 533 **Engineering Metallurgy** (II, 3)  
 534 (or OCE 534) **Corrosion and Corrosion Control** (I, 3)  
 535 (or OCE 535) **Advanced Course in Corrosion** (II, 3)  
 537 **Advanced Materials Engineering** (II, 3)  
 539 **Electron and Light Microscopy of Solids** (I, 3)  
 540 **Phase Equilibria** (II, 3)  
 541 **Transport Phenomena I** (I, 3)  
 548 (or FSN 548) **Food Engineering II** (II, 3)  
 549 (or FSN 549) **Food and Biochemical Engineering III** (II, 3)  
 572 **X-ray Diffraction and Fluorescence** (I, 3)  
 573 **Mechanical Metallurgy** (I or II, 3)  
 574 **Biochemical Engineering** (I, 3)  
 575 (or FSN 575) **Biochemical Engineering II** (II, 3)  
 581 **Introduction to Nuclear Engineering** (I and II, 3)  
 582 **Radiological Health Physics** (I, 3)  
 583 **Measurements in Nuclear Engineering** (I, 3)  
 586 **Nuclear Reactor Laboratory** (II, 3)  
 591, 592 **Special Problems** (I and II, 1-6 each)

## Chemistry (CHM)

Chairperson: Professor Fasching

- 101 **General Chemistry Lecture I** (I and II, 3) Fundamental concepts and principles in atomic structure, energy relationships, and reaction mechanisms balanced with applied and descriptive materials. (Lec. 3) Not open to students who have received credit for 103 or 191. Gonzales and Nelson (N)
- 102 **Laboratory for Chemistry 101** (I and II, 1) Experimental work illustrating certain concepts and principles of general chemistry. Experiments in solution, reaction rates, enthalpy, molar heat capacity, and electrochemistry. (Lab. 3) Pre: prior or concurrent registration in 101. Staff (N)
- 103 **Introductory Chemistry Lecture** (I, 3) One-semester general chemistry course designed for students whose curriculums require the one-semester organic chemistry course, 124. (Lec. 3) Not open to students who have received credit for 101 or 191. Staff (N)
- 105 **Laboratory for Chemistry 103** (I, 1) Fits course content of 103. (Lab. 3) Pre: prior or concurrent registration in 103. Staff (N)
- 107 **Chemistry of Our Environment** (I and II, 3) Elementary chemistry for non-science majors, emphasizing chemical aspects of the human environment. Chemistry of the biosphere, of pollution, and aspects of industrial chemistry. (Lec. 3) Euler (N)
- 112 **General Chemistry Lecture II** (I or II, 3) Elementary thermodynamics, chemical equilibrium in aqueous solutions, properties and reactions of inorganic species, practical applications of chemical principles. (Lec. 3) Pre: 101 or 103. Not open to students who have passed 104. Nelson (N)
- 114 **Laboratory for Chemistry 112** (I or II, 1) Semi-micro-qualitative analysis and its applications. (Lab. 3) Pre: prior or concurrent enrollment in 112. Not open to students who have passed 106. Staff (N)
- 124 **Introduction to Organic Chemistry** (I and II, 3) Elementary principles of organic chemistry with emphasis on aliphatic compounds, especially those of physiological significance such as amino acids and proteins, carbohydrates, fats, and waxes. (Lec. 3) Pre: 101, 102 or 103, 105. Concurrent registration in 126 required when curriculum specifies laboratory. Not open to students majoring in chemistry or chemical engineering. Abell (N)
- 126 **Laboratory for 124** (I and II, 1) Introduction to chemistry procedures, with emphasis on properties of substances of physiological significance. (Lab. 3) Pre: prior or concurrent registration in 124. Not open to students majoring in chemistry of chemical engineering. Staff
- 191 **General Chemistry** (I, 5) Descriptive inorganic chemistry, qualitative analysis, and an introduction to quantitative analysis. Required for students in the chemistry curriculum who have had a year of high school chemistry. (Lec. 4, Lab. 3) Not open to students who have received credit for 101 or 103. Abell (N)
- 192 **General Chemistry** (II, 5) Continuation of 191. (Lec. 4, Lab. 3) Durand (N)
- 212 **Quantitative Analysis** (I, 4) Principles of gravimetric and volumetric analysis with detailed attention to solution of stoichiometric problems. Laboratory analysis of representative substances by gravimetric or volumetric procedures. (Lec. 3, Lab. 3) Pre: 112 and 114. Forcé
- 226 **Organic Chemistry Laboratory** (I and II, 2) Common techniques and typical preparative methods in both aliphatic and aromatic series. (Lab. 6) Pre: prior registration in 227. Not open to students who have received credit for 229 or 230. Cheer
- 227 **Organic Chemistry Lecture I** (I or II, 3) General principles and theories with emphasis on classification, nomenclature, methods of preparation and characteristic reactions of organic compounds in aliphatic series. (Lec. 3) Pre: 112 and 114 or 192. Rosen
- 228 **Organic Chemistry Lecture II** (I or II, 3) Continuation of 227 with emphasis on the aromatic series. (Lec. 3) Pre: 227. Cheer, Vittimberga
- 229 **Organic Chemistry Laboratory I** (SS, 1) Common techniques and typical preparative methods in aliphatic series. Pre: prior or concurrent registration in 227. Staff
- 230 **Organic Chemistry Laboratory II** (SS, 1) Continuation of 229 with emphasis on the aromatic series. Pre: 229 or equivalent and prior or concurrent registration in 228. Staff
- 291 **Organic Chemistry** (I, 4) Development of principles and theory through an examination of structure, nomenclature, and reactions of organic compounds. (Lec. 3, Lab. 3) Pre: 192 or permission of instructor. Not open to students who have passed 227. Goodman
- 292 **Organic Chemistry** (II, 4) Continuation of 291 with extension to several additional families of compounds. (Lec. 3, Lab. 3) Pre: 291. Not open to students who have passed 228. Goodman
- 335, 336 **Physical Chemistry Laboratory** (I and II, 2 each) Physical chemical properties of gases, liquids and solutions; electrochemical cells; phase diagrams of binary and ternary systems; and chemical kinetics. Designed for chemistry majors. (Lab. 4) Pre: 431 for 335; 432 for 336. May be taken concurrently with 431, 432. Staff
- 353, 354 **Undergraduate Research** (I and II, 1-6 each) Methods of approach to a research problem. Literature, laboratory work and a report of an original problem or problems. (Lab. 3-18) May be repeated for a total of six credits each. Pre: permission of instructor. Staff
- 392 **Seminar in Chemistry** (II, 1) Preparation and presentation of papers on selected topics in chemistry. Required of seniors in chemistry. (Lec. 1) Undergraduate credit only. Pre: prior or concurrent registration in 228 or 432. Staff
- 401 **Intermediate Inorganic Chemistry** (I, 3) Principles of inorganic chemistry broadly related to structure and reactivity. Many-electron atoms bonding theories, acid-base concepts, coordination chemistry, reaction mechanisms. (Lec. 3) Pre: 432. Euler
- 412 **Instrumental Methods of Analysis** (II, 3) Theory and application of optical and electrical instruments to solution of chemical problems: flame photometry, emission spectroscopy, ultraviolet, visible, and infrared spectrophotometry, colorimetry, turbidimetry, nephelometry, fluorometry, potentiometry, voltametric titration methods. (Lec. 3) Pre: 228 and prior or concurrent registration in 432. Staff

**414 Instrumental Methods of Analysis Laboratory (II, 2)** Applications of instrumental methods to the solution of problems in analytical chemistry. (Lab. 6) Pre: prior or concurrent enrollment in 412. Force

**425 Qualitative Organic Analysis (I, 2)** Methods of identification of pure organic compounds. Separation of mixtures and identification of components by infrared and nuclear magnetic resonance spectroscopy. (Lab. 6) Pre: 292 or equivalent and prior or concurrent registration in 427. Cheer

**427 Intermediate Organic Chemistry (I, 3)** Intermediate organic chemistry with emphasis on organic reaction mechanism, stereochemistry, spectroscopic characterization, and newer synthetic methods. (Lec. 3) Pre: 226, 228 or 292. Cheer

**431, 432 Physical Chemistry (I and II, 3 each)** 431: Gas laws, kinetic theory, laws of thermodynamics, chemical equilibrium, phase equilibria, and electrochemistry. 432: Atomic theory, quantum chemistry, bonding, molecular interactions, and chemical kinetics. (Lec. 3) Pre: 112 or 192 and MTH 142, PHY 111 and 112 or PHY 213, 214, 285 and 286. May be taken for graduate credit only by students whose disciplines do not require physical chemistry as part of their undergraduate programs. Gonzales, Freeman and Yang

**501 Advanced Inorganic Chemistry I (I, 3)**

**502 Advanced Inorganic Chemistry II (II, 3)**

**504 Physical Methods of Inorganic Chemistry (II, 3)**

**511 Advanced Analytical Chemistry I (I, 3)**

**512 Advanced Analytical Chemistry II (II, 3)**

**518 Radiochemistry (II, 3)**

**521 Advanced Organic Chemistry I (I, 3)**

**522 Advanced Organic Chemistry II (II, 3)**

**531 Advanced Physical Chemistry I (I, 3)**

**532 Advanced Physical Chemistry II (II, 3)**

**535 Chemical Applications of Group Theory (I, 3)**

**536 Molecular Spectroscopy and Structure (II, 3)**

**544 Data Processing in Chemistry (II, 3)**

## Civil and Environmental Engineering (CVE)

Chairperson: Professor Kovacs

**216 Introduction to Civil and Environmental Engineering System (I, 3)** Introduction to a wide range of civil and environmental engineering topics. Emphasis on application of mathematical techniques and computer programming to the solution of problems. (Lec. 3) Pre: MTH 141, CSC 201. J. Al-Kazily

**220 Mechanics of Materials (I and II, 3)** Theory of stresses and strains, thin-walled

cylinders, beam deflections, columns, combined bending, and direct stresses, joints, indeterminate beams. (Lec. 3) Pre: MCE 162. Staff

**304 Introduction to Professional Practice I (II, 1)** Discussion with faculty and visiting engineers and other speakers on curriculum and career planning, professional practice and ethics, employment opportunities, and graduate study. (Lab. 2) Required of all civil engineering students in their junior year. Staff

**305 Introduction to Professional Practice II (I, 1)** Discussion with faculty and visiting engineers and other speakers on curriculum and career planning, professional practice and ethics, employment opportunities, and graduate study. (Lab. 2) Required of all civil engineering students in their senior year. Staff

**315 Surveying I (I, 3)** Theory and practice of plane surveying including use, care, and adjustment of surveying instruments, boundary surveys, horizontal and vertical curves, earthwork and topography. (Lec. 2, Lab. 3) Pre: MTH 141. Staff

**322 Civil Engineering Laboratory (I and II, 2)** Properties and behavior of engineering materials. Directed work in concrete and experimental stress analysis. Independent student projects. (Lec. 1, Lab. 3) Pre: 220. Staff

**334 Construction Planning and Specifications (II, 3)** Introduction to construction planning; procedures involved in construction activities with major emphasis on heavy construction. (Lec. 3) Pre: 220. Staff

**347 Highway Engineering (II, 4)** Principles of design of modern highways and streets including administrative and economic considerations; bituminous materials, pavements, geometric layout, drainage, construction, and maintenance. (Lec. 3, Lab. 3) Pre: 216. J. Al-Kazily

**352 Structural Analysis I (I, 3)** Structural systems: beams, frames, trusses, conjugate beam, virtual work, general method for indeterminate structures. Introduction to matrix methods. (Lec. 3) Pre: 220. Staff

**353 Structural Analysis II (II, 3)** Energy methods, slope deflection, moment distribution, influence lines, stability, matrix methods. Introduction to finite elements. (Lec. 3) Pre: 352. Staff

**370 Hydraulic Engineering (II, 3)** Applied hydraulics of flow in closed conduits and open channels. River and groundwater hydraulics. Analysis of hydraulic structures. Reservoir design. Principles of hydrology. (Lec. 3) Pre: MCE 354. Wright

**374 Environmental Engineering (I, 4)** Systems concerned with urban environmental problems of water supply and

treatment, sewerage treatment of municipal and industrial waste waters, stream pollution, air pollution, and disposal of solid waste materials. (Lec. 3, Lab. 2) Pre: MTH 243 or permission of department. Staff

**381 Geotechnical Engineering (II, 4)** Engineering properties of soil seepage, drainage, and consolidation; theory of earth pressure, bearing capacity and slope stability. Laboratory studies of physical properties, compaction, seepage, consolidation, and shear strength. (Lec. 3, Lab. 3) Pre: 220. Staff

**391 Honors Work (I and II, 3)** Independent study under close faculty supervision. Discussion of advanced topics in civil engineering in preparation for graduate work. Pre: junior standing or permission of department. Staff

**396 Civil Engineering Analysis (II, 3)** Problems from several fields of civil and environmental engineering solved by numerical methods with particular emphasis on use of electronic digital computers. Computer assignments in the area of each student's interest. (Lec. 2, Lab. 3) Pre: 216. Marcus

✓ **406 (or OCE 406) Introduction to Coastal and Ocean Engineering (II, 3)** Wave theory and forecasting, beach erosion, sediment transport, wave forces, effect of pollutants on water quality, materials for ocean construction. (Lec. 3) Pre: junior standing in civil engineering. Not for graduate program credit. Staff

✓ **407 (or OCE 407) Project in Ocean Engineering (II, 3)** Independent study, design project, or research project on an approved topic related to the ocean environment. Pre: 491 or permission of instructor. Not for graduate program credit. Staff

✓ **411 (or OCE 411) Basic Coastal Measurements (I, 3)** Basic coastal measuring exercises from boats, in-situ, and on laboratory samples. Included will be measurement of current and tide, sediment transport and erosion, sediment testing, water testing, and bottom profiling. (Lec. 1, Lab. 3) Pre: advanced standing in civil engineering or permission of instructor. Not for graduate program credit. Staff

**442 Traffic Engineering (I, 3)** Highway traffic characteristics and methods of providing for an effective, free and rapid flow of traffic. Types of studies, regulations, control devices and aids, planning and administration. (Lec. 2, Lab. 3) Pre: 347. J. Al-Kazily

**446 Transportation Engineering (II, 3)** Transportation planning and design, technological characteristics and design considerations of major transportation system. (Lec. 3) Pre: 347 or permission of instructor. J. Al-Kazily



**453 Computer Analysis of Structures (I, 3)** Introduction to matrix methods of structural analysis. Solutions of planar structures using a digital computer. (Lec. 3) Pre: 353 and 396. Staff

**460 Analysis and Design of Metal Structures (II, 3)** Properties of metal; current design codes; practice for the design of steel structural components; simplified and computer-oriented methods of analysis and design. Nonlinearities. Comprehensive design problems. (Lec. 2, Lab. 3) Pre: 352. Not for graduate degree program credit. Staff

**465 Analysis and Design of Concrete Structures (I, 3)** Current criteria and practice for design of reinforced and prestressed concrete structures. Elastic and ultimate strength analysis of beams, slabs, columns and frames. Comprehensive design problems. (Lec. 3, Lab. 3) Pre: 353. Not for graduate degree program credit. Staff

**470 Water and Wastewater Transport Systems (II, 3)** Analysis of water storage and transmission. Design of water distribution and wastewater collection systems. Pumps and pumping stations. Pre: 370 or 374 or permission of instructor. Not for graduate degree program credit. Staff

**471 Water and Wastewater Treatment Systems (I, 3)** Development of water quality standards. Design and analysis of physical, chemical, and biological treatment processes and their application to water and wastewater purification systems. (Lec. 2, Lab. 3) Pre: 374 or permission of instructor. Not for graduate degree program credit. Staff

**472 Industrial Air Pollution (I or II, 3)** Sources and characteristics of urban-industrial air pollution, allowable concentrations and control, stack sampling, chemical supplements in air pollution control, diffusion of pollutants, site selection and abatement programs. Air resources management programs. (Lec. 3) Pre: permission of department. Staff

**474 Water Quality Sampling and Analysis (II, 3)** Laboratory and field work including sampling of surface and groundwater; chemical and biological analyses for water, monitoring, treated effluent quality control, and detection of hazardous contaminants. (Lec. 1, Lab. 6) Pre: 374 or permission of instructor. Offered in spring of odd years. Poon, Sussman, and Wright

**475 Water in the Environment (II, 3)** Evaluation of water as a resource and its relation to the environment: hydrologic cycle, water budgets, water uses, drought, flood, current water problems. (Lec. 3) Pre: MTH 243 and CVE 374 or permission of instructor. Offered in spring of even calendar years. Staff

**478 Solid Waste Disposal and Management (II, 3)** Sources, collection and treatment methods for the removal of solid wastes from the environment. Recovery and re-use of waste materials. Economics of solid wastes and by-products. Interrelation between solid wastes, air and water pollution. (Lec. 3) Pre: permission of department. Sussman and Poon

**481 Soil Behavior (I, 3)** Behavior of granular and cohesive soils with experimental determinations of soil properties. Emphasis on shearing strength and seepage studies. (Lec. 2, Lab. 3) Pre: 380 or permission of instructor. Staff

**483 Foundation Engineering (II, 3)** Application of the principles of soil mechanics to the design of sheet piling, cofferdams, and wharves. Advanced problems in the selection and design of foundations for major structures including buildings, bridges, walls, dams, etc.; case studies. (Lec. 2, Lab. 3) Pre: 380. Staff

**485 Engineering Geophysics**  
See Geology 485.

**491, 492 Special Problems (I and II, 1-6 each)** Advanced work, under supervision of a member of the staff and arranged to suit individual requirements of the student. (Lec. or Lab. according to nature of problems. Credits not to exceed a total of 12) Pre: permission of department. Staff

**495 Civil and Environmental Engineering Systems (I, 3)** Practical civil and environmental engineering projects, broad in scope, in the areas of water resources, structures, pollution control and transportation, are studied, analyzed, designed and discussed. (Lec. 3) Pre: senior standing in civil engineering. Not for graduate degree program credit. Marcus

**523 (or OCE 523) Coastal Structures (II, 3)**

**524 (or OCE 524) Marine Structural Design (II, 3)**

**551 Advanced Structural Analysis (I or II, 3)**

**560 Structural Design (I or II, 3)**

**565 Structure Dynamics (I or II, 3)**

**570 Sanitary Chemistry (I, 3)**

**571 Sanitary Chemistry Laboratory (II, 3)**

**572 Biosystems in Sanitary Engineering (I or II, 3)**

**573 (673) Theory of Water Purification and Treatment (I, 3)**

**575 Open Channel Hydraulics (I or II, 3)**

**586 Physico-chemical Properties of Soils (I, 3)**

**587 Groundwater Flow and Seepage Pressure (I, 3)**

**588 Groundwater Hydrology (II, 3)**

**596 Numerical Methods in Structural Engineering (I or II, 3)**

## Classics (CLA)

Section Head: Associate Professor Cashdollar

**394 Greek Mythology and Religion: Gods and the Universe (I and II, 3)** Ancient Greek gods and cults. Cosmogony, succession, anthropogony, cosmic catastrophe, Hellenistic and late classical developments in theology and cult practice. Readings in English translation, color slides. (Lec. 3) Cashdollar (A) (F)

**395 Greek Mythology: Gods, Heroes, and Humans (I, and II, 3)** The hero in ancient Greek epic and drama. Epic cycles, historical legend, folktale. Hellenistic developments in hero cults. Occult practices. Readings in English translation, color slides. (Lec. 3) Cashdollar (A)

**396 Mythology of the Romans (I and II, 3)** Ancient Roman gods and cults. Native, Greek and oriental myths and native historical legend in Roman epic, lyric, drama, prose, syncretism, occultism, astrology. Readings in English translation, color slides. (Lec. 3) Cashdollar (A) (F)

**397 Greek Mythology and Tragedy (I or II, 3)** Relationship between Greek myth and classical tragedy, Attic and/or Roman. Employment of the same myth for different dramatic purposes. Mythological evolution through tragedy. Readings in English translation. Cashdollar

## Communication Skills (CMS)

**101 College Communication Skills (I and II, 6)** An integrated, interdisciplinary approach to the acquisition of communication skills. Instruction given in composition and oral communication utilizing a theoretical model common to both. Not open to students who are currently taking or who have taken SPE 101 or WRT 101. Katula, Schwegler, Dillavou, Martin, Brownell (Cw) (C)

## Communications

### Communication Skills

101 College Communication Skills

### Journalism

212 News Writing and Reporting

324 Magazine Article and Feature Writing

### Management

227 Business Communications

### Speech Communications

101 Fundamentals of Oral Communication

103 Interpersonal Communication

- 215 Argumentation and Debate
- 220 Group Discussion
- 302 Advanced Public Speaking

#### Writing

- 002 Writing Lab
- 101 Composition I
- 102 Composition II
- 112 English as a Second Language I
- 122 English as a Second Language II
- 123 College Writing for Returning Students
- 300 Advanced Expository Writing
- 333 Scientific and Technical Writing

### Communicative Disorders (CMD)

Chairperson: Associate Professor Singer

**260 Speech Development and Correction (I and II, 3)** Normal development of human speech, causes of speech and hearing disorders, and techniques of speech and hearing rehabilitation. For those in teaching, nursing, guidance, psychology, and education of the physically handicapped and mentally retarded. (Lec. 3) Staff

**261 Survey of Hearing and Deafness (I and II, 3)** Introduction to the science of audiology. Pathologies of the hearing mechanism, basic methods of audiometry, interpretation of the audiogram, hearing aids, and rationale and methods in hearing conservation programs. Observations and practice in the Rhode Island Hospital Hearing and Speech Center. (Lec. 3) Staff

**372 Auditory and Speech Mechanisms (II, 3)** Structure and function of the organs of hearing and speech as they relate to normal and pathological communication; theories of cortical involvements, central and peripheral nervous systems relevant to rehabilitation procedures. (Lec. 3) Pre: junior standing and permission of department. Staff

**373 Phonetics (I, 3)** International Phonetic Alphabet; analysis of phonetic and phonemic elements in major American English dialects; practice in transcription of standard and defective speech. (Lec. 3) Pre: junior standing. Beaupre and Staff

**374 Communication Processes (II, 3)** Psychocommunication processes basic to speech; theories of language learning; psychology of hearing and deafness; interrelationships between speech and personality. (Lec. 3) Pre: junior standing. Beaupre

**375 Language Development (I, 3)** Development phenomena in speech and language; causal factors of delayed speech and language; survey of evaluative and habilitative programs for children with deviant language development. (Lec. 3) Pre: junior standing. Staff

**376 Hearing and Speech Science (I, 3)** Physical properties and speech signal, analysis of the physical bases of speech production and speech perception. (Lec. 3) Pre: 372 and 6 credits in natural sciences. Staff

**391, 392 Honors Work (I and II, 1-3 each)** Thesis work or an equivalent independent project under faculty supervision for honors students participating in the University Honors Program. Pre: admission to departmental honors program. Staff

**475 Gestural Communication (I, 2)** Visual systems such as Ameslan, with emphasis on the cheirology and syntax of signing, vocabulary, and levels of language among deaf communicators. Finger spelling and sign language for educational, rehabilitative, and artistic goals studied. (Lec. 1, Lab. 2) Pre: junior standing or graduate standing. Not for graduate program credit in Communicative Disorders. Beaupre

**491, 492 Special Problems (I and II, 1-3 each)** Selected areas of study pertinent to communicative disorders. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. Staff

**504 Speech and Hearing Research (I, 3)**

**506 Speech and Hearing Science (II, 3)**

**552 Advanced Measurement of Hearing (I and II, 3)**

**553 Pediatric Audiology (I, 3)**

**554 Rehabilitative Audiology (II, 3)**

**555 Amplification for the Hearing Impaired (I, 3)**

**556 Electrophysiological Measures in Audiology (II, 3)**

**560 Disorders of Phonation (II, 3)**

**561 Articulation Disorders (I, 3)**

**564 Disorders of Symbolization (II, 3)**

**567 Clinical Practicum in Speech Pathology (I and II, 1-3)**

**568 Clinical Practicum in Audiology (I and II, 1-3)**

**569 Diagnostic Procedures (I, 3)**

**572 Medical Audiology (II, 3)**

**573 Contemporary Problems in Audiology (I, 3)**

**574 Environmental Audiology (II, 3)**

**577 Speech and Language for Hearing Impaired (II, 3)**

**581 Cerebral Palsy (I, 3)**

**584 Deaf Speech and Language (II, 3)**

**585 Aphasia and Allied Language Disorders (I, 3)**

**586 Alaryngeal Speech (II, 3)**

**591 Contemporary Issues in Speech and Language Pathology (II, 3)**

**592 Stuttering and Cluttering (I, 3)**

### Community Planning (CPL)

Director: Professor Galloway

**410 Fundamentals of Urban Planning (II, 3)** Survey of urban planning principles, methods, and techniques pertinent to contemporary urban problems. History of city forms and functions and development of urban planning as a profession. Problems and priorities in shaping the future urban environment. (Lec. 3) Primarily for students not enrolled in the graduate curriculum in community planning and area development. Kupa

**434 Introduction to Environmental Law (II, 3)** Surveys issues arising out of laws designed to protect the environment and manage resources: right to a decent environment, government regulation versus private property rights, citizen participation in planning environmental controls. (Lec. 3) For students not enrolled in the graduate curriculum in community planning and area development. Cushman

**501 Introduction to Community Planning, History and Theory (I, 3)**

**510 Community Planning and Political and Social Change (I, 3)**

**511 Planning and Natural Environmental Systems (I, 3)**

**512 Spatial and Fiscal Relationships of Communities (II, 3)**

**516 (or GMA 516) Seminar on the Urban Waterfront (I, 3)**

**522 Planning Law (I, 3)**

**523 Planning Theory (I, 3)**

**524 Research Methods (II, 3)**

**525 Introduction to Planning Methods (I, 3)**

**526 Planning and Policy Analysis (II, 3)**

**530 Urban Design and Public Policy (I, 3)**

**533 Planning and Intergovernmental Relations (II, 3)**

**535 Human Resources Planning (I, 3)**

**536 International Comparisons in Community Planning (II, 3)**

**537 (or REN 532) Land Resources Economics (II, 3)**

**538 Site Planning (I, 3)**

**539 Environmental Law (II, 3)**

**540 Historic Preservation Seminar (I, 3)**

**541 Urban and Rural Housing Policy (I, 3)**

**542 Employment Planning (II, 3)**

**543 Social Indicator Analysis in Planning (II, 3)**

**545 Land Development Seminar (II, 3)**

**546 Urban and Rural Transportation (II, 3)**

**547 Planning Behavior and Organizations (II, 3)**

**548 Planning and Capital Improvement Programming (I, 3)**

**549 Seminar in Ecological Planning (II, 3)**

**591, 592 Special Problems in Planning (I or II, 1-6 each)**

**593-598 Special Problems in Planning (I or II, 1-6 each)**

## Comparative Literature Studies (CLS)

Coordinator: Associate Professor Kuhn

### 160 Masterpieces of Literature

See English 160.

**250 Themes and Myths** (I or II, 3) Study of the evolution and transformation of a myth or theme in several national literatures. An introduction to a comparative and interdisciplinary approach. (Lec. 3) May be repeated for credit as often as the topic changes. May be taken once for general education credit. Fall 1984: Science Fiction: Pap, Pulp, or Plum. S. Vaughn (Eng.) Spring 1985: World of Business in Literature. R. Trivelli (Lang.) (A)

### 335 (or EDC 335 or ENG 335 or SOC

#### 335) Interdisciplinary Studies in

**Comparative Literature** (I or II, 3) Study of the interrelationships of two or more national literatures (in translation) with another discipline. (Lec. 3) May be repeated for credit as often as the topic changes. Pre: 2nd semester sophomore standing or permission of instructor. Staff

**350 (or ENG 350) Literary Theory and Criticism** (I or II, 3) Introduction to theories of literature and their application in the analysis of selected texts. (Lec. 3) May be repeated for credit as often as the topic changes. Spring 1985: Survey of Literary Theory and Criticism. C. Murphy (Eng.)

**450 Studies in Comparative Literature** (I or II, 3) Detailed study of literary movement, genre, or an aspect of literature as seen in two or more literatures. (Lec. 3) May be repeated for credit as often as the topic changes. Pre: 6 credits in literature or permission of instructor. Fall 1984: European Romanticism. R. Tutt (Eng.)

**510 Introduction to Comparative Literature** (I or II, 3)

**520 Literary Theory and Criticism** (I and II, 3)

**530 Approaches in Comparative Literature** (I or II, 3)

**597 Special Problems** (I and II, 1-6)

## Computer Science (CSC)

Chairperson: Associate Professor Lamagna

**201, 202 Introduction to Computing I, II** (I and II, 3 each) Algorithms, programs, and computers. Programming and program structure, data representation, organization and characteristics of computers. Computer solution of several numerical and non-numerical problems using one or more programming languages. (Lec. 3) Pre: MTH 109 or equivalent high school mathematics

for 201; 201, MTH 141 for 202. Staff. (M) for 201

**220 Computers in Society** (I or II, 3) History, operation, application, and social significance of computers. Emphasis on the role of the computer in society with respect to political, economic, cultural, social, and ethical aspects: its capabilities, potentials and dangers. (Lec. 3) Pre: 201. Staff (S)

**240 Foundations of Computational Analysis** (I or II, 3) Combinatorial techniques used in non-numerical computation and analysis of algorithms. Topics include counting, enumeration, recurrence relations, graphs, and networks. Complexity analysis of several representative problems and algorithms for their solution. (Lec. 3) Pre: 202, prior or concurrent registration in MTH 215. Staff

### 283 Introduction to PL/I Coding

(I or II, 1) An intensive introduction to the syntax and use of the PL/I programming language. (Lec. 1) Pre: 201 or 381. Not open to students with credit in 301. Staff

### 285 Introduction to COBOL Coding

(I or II, 1) An intensive introduction to the syntax and use of the COBOL programming language. (Lec. 1) Pre: 201 or 381. Not open to students with credit in 301. Staff

### 301 Comparative Programming Languages

(I and II, 3) Organization of programming languages including data and control structures, syntax, and semantics. Block structured languages, recursion, parameter passing mechanisms. Run-time considerations, operating environments, interpretive languages. Programming exercises in several representative languages. (Lec. 3) Not open to students having credit for 283 or 285. Pre: 202. Staff

**302 Compiler Design** (I or II, 3) Grammars and languages, lexical analysis, syntactic analysis, internal forms, symbol tables, run time storage administration. (Lec. 3) Pre: 240 and either 301 or 283 and 285. Staff

### 311 Machine and Assembly Language

**Programming** (I and II, 3) Introduction to the principles of machine and assembly language programming. Internal machine representation of character, integer and floating point numbers. Logical operations on non-numeric data. (Lec. 3) Pre: 202. Staff

**350 Introduction to Numerical Computation** (I or II, 3) Finite precision arithmetic, floating point number systems, pitfalls in computation, efficient use of array storage, assessing algorithm efficiency, iterative processes, halving and doubling algorithms, built-in functions, diagnostic methods. (Lec. 3) Pre: 202, MTH 215, 243. Staff

**382 Introduction to Job Control Language** (I or II, 1) An intensive introduction to the syntax and use of the Job Control language

used by the University's Academic Computer Center. (Lec. 1) Pre: 202. Staff

### 406 Microcomputer Applications

**Laboratory** (I or II, 3) Practical experience with microcomputer systems including high-level languages, disk operating systems, utilities. Typical microcomputer applications including color graphics and animation, digitization, plotting, speech recognition and synthesis, computer-aided instruction, telecommunications, music synthesis. (Lec. 2, Lab. 2) Pre: 202, 283 or 301. Weideman, Lamagna

### 411 Computer Organization and Program-

**ming** (I or II, 3) Logical structure of computer systems, information representation, instruction codes, arithmetic and logical operations, flow of control. Assembly language programming, input-output, sub-routines, linkages, macros, conditional assemblers. (Lec. 3) Pre: 311, and prior or concurrent registration in 382. Staff

**412 Operating Systems** (I or II, 3) Structure of monitor and executive systems, time-sharing systems, real-time systems, input-output systems, file organization and manipulations, command languages. (Lec. 3) Pre: 411. Staff

**413 Data Structures** (I or II, 3) Formal data structures. Algorithms for handling such common structures as arrays, linear lists, trees and multi-linked lists. Searching and ordering techniques. Data management systems. Data structures in programming languages. (Lec. 3) Pre: 240, prior or concurrent registration in 382 and MTH 215. Staff

### 416 Microcomputer Systems Architecture

(I or II, 3) Recent developments in micro-processor technology. Processor organization, memory addressing modes, instruction sets. Input-output organization, mass storage, disk operating systems, telecommunications, distributed networks. Machine and assembly language programming. (Lec. 2, Lab. 2) Pre: 311. Lamagna, Weideman

### 491 Directed Study in Computer Science

(I and II, 1-3) Advanced work in computer science. Conducted as supervised individual projects. Pre: permission of department. S/U credit. Staff

### 492 Special Topics in Computer Science

(I or II, 3) Advanced topics of current interest in computer science. (Lec. 3) Pre: permission of department. Staff

### 500 Scientific Applications of Digital Computers I

(I or II, 3)

**502 Theory of Algorithmic Languages and Compilers** (I or II, 3)

**505 (or ELE 505) Design of Digital Circuits** (I, 3)

- 512 **Advanced Operating Systems** (I or II, 3)  
 515 **Theory of Computation** (I or II, 3)  
 525 (or IDE 525) **Simulation** (II, 3)  
 535 **Information Organization and Retrieval** (I or II, 3)  
 536 **Database Management Systems** (I or II, 3)  
 540 **Analysis of Algorithms** (I or II, 3)  
 551 **Scientific Applications of Digital Computers II** (I or II, 3)  
 581 (or ELE 581) **Artificial Intelligence** (I or II, 3)  
 582 (or ELE 582) **Robotics** (I or II, 3)  
 583 (or ELE 583) **Computer Vision** (I, 3)  
 591 **Directed Study in Computer Science** (I and II, 1-3)  
 592 **Special Topics in Computer Science** (I or II, 3)

## Consumer Studies (CNS)

Program head: Associate Professor Helms

**210 Management in Family Living** (I and II, 3) Interaction of resources, goals, and managerial processes in the home seen in the context of the larger community. Applications primarily in the area of human resources. (Lec. 3) Pre: sophomore standing or permission of department. Noring

**220 Consumer in the Economy** (I and II, 3) Application of basic economic principles to consumer problems in a complex marketplace, buyer-seller relationships, effective consumer decision-making, effects of government policies on consumers. (Lec. 3) Pre: economics course. Staff (S)

**320 Personal Finance** (I and II, 3) Personal financial planning and decisions for attaining individual and family goals. Factors which affect, protect, and enhance financial security. (Lec. 3) Pre: junior standing. Christner

**340 Family Housing** (I, 3) Evaluation and study of types of housing in relation to the family and community. Emphasis on socio-economic factors, housing laws, and aesthetic qualities concerned with housing. (Lec. 3) Noring

**342 Housing for the Elderly** (II, 3) Aspects of housing and near environmental conditions and needs, alternatives, legislative programs and support services related to housing for the elderly. (Lec. 3) Pre: HCF 220 or permission of instructor. Noring

**350 Consumer Purchasing of Durable Goods** (II, 3) Decision-making concerning selection of consumer durables relative to feature availability, resource depletion, and natural energy use. (Lec. 2, Lab. 2) Christner

**371 Seminar in Home Management** (II, 3) Application and analysis of concepts of management in group living situations and

assessment of community resources as they relate to use by individuals/families in resolving managerial problems. (Lec. 3) Pre: 210, HCF 330 or SOC 212. Noring

**401 Consumer and Managerial Problems of Families with Special Needs** (II, 3) Seminar to develop strategies for assisting families with unusual demands for consumer and managerial skills. Attention to such groups as unemployed, marginally employed, minorities, handicapped, elderly, and female-headed households. (Lec. 3) Pre: a CNS course, or an HSS course or HCF 330 or permission of instructor. Christner

**420 Consumer Protection** (I, 3) Effectiveness of diverse approaches to consumer protection. Analysis of techniques such as information disclosure, standards for products and services, government and private agencies, redress channels, and legislation. (Lec. 3) Pre: 220 or 320 or permission of instructor. Christner

**422 Current Consumer Topics** (II, 3) Critical examination of current topics in consumer affairs. Includes issue and policy analysis; costs and benefits for consumers, business and government; implications for policy formation. (Lec. 3) Pre: 220 or 320. Staff

**457 (or HLT 457) Health and Safety Issues of Consumer Products** (I or II, 3) An interdisciplinary approach to solving health and safety problems arising from the use of complex consumer products. Emphasis on measurement systems, product liability, and product design. (Lec. 3) Pre: senior standing with 6 credits completed in health, consumer affairs, or other upper level professional requirements and permission of instructor. Staff

**470 Special Problems** (I and II, 2-4) Special problems selected from home management theory, consumption economics, work simplification, and equipment depending upon the specific interest of students. (Lab. TBA) Staff

**532 (or HED 532) Consumer Education** (II, 3)  
**570 Special Problems** (I and II, 3)

## Dental Hygiene (DHY)

Chairperson: Professor B. Wilson

**101 Pre-Clinical Dental Hygiene** (I, 1) Philosophies, concepts and procedures needed before beginning experience in dental hygiene clinic. Emphasis on the basic concepts and principles in preventive oral health care. (Lec. 1) Wilson

**125 Dental Morphology, Head and Neck Anatomy** (I, 3) Study of form and function of teeth and their related structures. A detailed study of the anatomy and physiology of the structures of the head and neck. (Lec. 4, Lab. 2) Bliss

**126 General and Oral Histology and Embryology** (II, 3) Cytology, development and microscopic anatomy of oral cavity. (Lec. 2, Lab. 2) Pre: 125. Persechino

**128 Periodontics** (II, 1) Classification of periodontal disease, clinical picture, causative factors, and types of treatment. (Lec. 2) Ross

**135 Technique-Clinical Dental Hygiene I** (I, 1) An introduction to knowledge and skills essential for the performance of dental hygiene services. Emphasis on principles of instrumentation and perfecting clinical competence on manikin heads and laboratory partners. (Practicum 6, Lec. 1) Pre: permission of department chairperson. Staff

**136 Clinical Dental Hygiene II** (II, 2) Development of clinical skills. Application of the basic principles of oral inspection, charting, radiology, fluoride application and dental health education. (Practicum 14, \* Lec. 1) Staff

**141 Dental Assisting** (I, 1) Lectures, clinical observations, and practice devoted to methods of assisting dentists. (Practicum 4) Staff, Regional Dental Center, Newport

**227 General and Oral Pathology** (I, 3) Significance, signs, symptoms and relationship of general disease to oral disease. Stress on manifestation of oral pathology and clinical recognition of atypical or abnormal oral conditions and disease. (Lec. 3) Carlotti

**231 Roentgenology** (I, 2) Lectures, demonstrations and laboratory practice. Study of nature and behavior of X-rays, extra- and intra-oral radiographic techniques and procedures. Recognition and interpretation of information revealed by radiographic examination. (Lec. 1, Lab. 2) Wilson and Staff

**237 Clinical Dental Hygiene III** (I, 2) Continuation of 136. (Practicum 20\*) Staff

**238 Clinical Dental Hygiene IV** (II, 2) Continuation of 237. (Practicum 20\*) Staff

**244 Dental Materials and Operative Technique** (II, 1) Study of physical, chemical and mechanical properties of materials used in dentistry. Laboratory procedures develop skill in preparation, manipulation, and use of materials relevant to the practice of dental hygiene. (Lec. — Practicum 3 for 8 weeks) Kilcline



**248 Legal and Ethical Responsibilities in Dental Practice Management (II, 2)** Ethics and legal responsibilities relating to the practice of dental hygiene and dentistry. Emphasis on principles of practice management in private practice and in the specialty areas. (Lec. 2) For dental hygiene majors only. Staff

**250 Dental Health Education (II, 2)** Educational philosophy, teaching methods and acquisition of skills in methods of research. Investigation, review, interpretation and critical evaluation of scientific literature as the basis for dental health education. (Lec. 2) Wilson

**252 Community Health (II, 2)** Philosophy and background of public health practice. Review of current health concepts, practice, needs, and problems. Emphasis on methods for promotion of optimal health for all. Supervised field experiences. (Lec. 2) For majors only. Wilson

**260 Advanced Preventive Dentistry (II, 2)** Methodology of clinical and educational research. Interpretation of statistics, in-depth study of fluorides and dental disease. Consideration of the aging process and related problems. (Lec. 3) Yacovone

**462 Oral Care of the Aging and/or Chronically Ill (I, 3)** Practical approach for the health-related professional. Emphasis on recognition of oral disorders, oral health care strategies and principles of prevention for the aged and chronically ill. (Lec., Field Study 3) Pre: ZOO 242 and HCF 220 or permission of instructor. Saunders

**464 Field Experience in Community Oral Health (II, 3)** Directed field experience in dental health education in cooperation with community-based agencies. Weekly seminar. The experience will be defined as a job description and learning contract or letter of intent arranged by the instructor with the student and the agency supervisor. Pre: 252 or permission of instructor. Brown

## Earth Science (ESC)

See courses offered by the Department of Geology.

## Economics (ECN)

Chairperson: Associate Professor Starkey

**125, 126 Economic Principles (I and II, 3 each)** Principles underlying the organization and functioning of the economic system. Description and analysis of institutions and market forces affecting the production and distribution of goods and services, business fluctuations, and international trade. (Lec. 3) Pre: for 126, 125 or permission of department.

125 is not open to students who have passed 123. Staff (S)

**180 Current Topics in Economics (I or II, 1)** A selected topic of current interest. May be repeated with permission of the department, providing the topic is not the same. (Lec. 1) Staff

**300 Radical Critiques of Contemporary Political Economy (II, 3)** Radical right and radical left critiques. Radical views on values, methodology, production planning, income distribution, economic power, the military-industrial complex, imperialism, and racial and sexual discrimination. (Lec. 3) Pre: 125, or permission of instructor. Rayack (S)

**301 Labor Economics (I or II, 3)** Impact of industrialization on workers; survey of the basic principles of labor market organization and operation; unemployment and remedies; wage determination under union and non-union conditions. (Lec. 3) Pre: 125, 126. Lardaro

**302 Economic Development of the United States (I or II, 3)** Developmental factors in American economic life introduce students to the past and present business environment. (Lec. 3) Pre: 126 or permission of department. Staff

**327 Intermediate Economic Theory: Income and Employment (I or II, 3)** Measurement of national income. Theory of the determination of the general level of income, employment, and prices. Business fluctuations. (Lec. 3) Pre: 125 or 126 or 590 or permission of instructor. Staff

**328 Intermediate Economic Theory: Pricing and Distribution (I or II, 3)** Market conditions and forces affecting the pricing and production of goods and services, the allocation of resources, and the distribution of income. (Lec. 3) Pre: 126 or permission of instructor. Staff

**334 Money and Banking (I or II, 3)** Structure and functioning of monetary institutions. Analyses of monetary theories. The role of monetary policy. U.S. banking structure: its operations and functioning. (Lec. 3) Pre: 126 or permission of instructor. Barnett

**337 Business and Government (I or II, 3)** Historical and present attitudes and policies of various levels of government toward the changing structure of American business. Emphasis on legal and economic concepts of business activity. (Lec. 3) Pre: 125 or 126 or permission of instructor. Hellman

**338 International Economics (I or II, 3)** Theory and evidence on international trade and finance. Includes determinants and welfare effects of foreign trade, international investment, migration, exchange rates, and the balance of payments. (Lec. 3) Pre: 125 or permission of instructor. Burkett

**342 Public Finance (I, or II, 3)** Examination of the theory and practice of public expenditures, revenues, and fiscal policy, with major emphasis on federal fiscal affairs. (Lec. 3) Pre: 125 or 126 or permission of instructor. Lardaro

**351, 352 Assigned Work (I and II, 3 each)** Special work in economics when it can be arranged to meet the needs of individual students who desire independent work. (Lec. 3) Pre: 125 or 126 or permission of instructor. S/U credit. Starkey

**361 A Survey of Economic Thought (I and II, 3)** Economic thought from Middle Ages to present; characteristics of classical, neo-classical and contemporary doctrinal developments. (Lec. 3) Pre: 125 or 126 or permission of instructor. Ramstad (S)

**363 Economic Growth and Development (I or II, 3)** Basic problems in economic growth and development of so-called backward or pre-industrial countries. Emphasis on population trends, agrarian reforms, capital formation, international aid programs, respective roles of private and public enterprise. (Lec. 3) Pre: 125 or 126 or permission of instructor. Suzawa

**374 Introduction to Quantitative Methods in Economics (I and II, 3)** Survey of the basic quantitative tools used by economists; mathematics, statistics and computer software. (Lec. 3) Pre: 125, 126. Ramsay and Mead

**375 Introduction to Quantitative Methods I (I, 4)** Mathematical techniques used in modern economic theory. Linear algebra, the calculus of several variables, constrained maximization, and differential equations. Application to economic problems. (Lec. 3, Lab. 2) Pre: 125, 126 and MTH 141, or permission of instructor. Mead

**376 Introduction to Econometrics (I or II, 4)** Application of econometric methods to economic problems. Econometric tools applied to micro- and macro-economic problems. (Lec. 3, Lab. 2) Pre: 126 or permission of instructor. Lardaro

**401 Poverty in the United States (I or II, 3)** Economic analysis of the determinants and distribution of poverty in the U.S. Evaluation of social welfare programs and various other proposals for the elimination of poverty. (Lec. 3) Pre: 125 or 126, or permission of instructor. Latos

**402 Urban Economics (I or II, 3)** Analysis of selected economic problems of urban areas. Development of methodological approaches through discussion of policy issues. (Lec. 3) Pre: 125 or 126, or permission of instructor. Mead

**403 Theory and Topics in the Economics of Crime** (I or II, 3) Application of economic analysis to various aspects of criminal activity. Consideration of economic determinants of income-generating crime, economic behavior of participants and cost to society. (Lec. 3) Barnett

**404 Political Economy of Class, Race, and Gender** (I or II, 3) Theoretical and empirical analysis of class, race and gender differentials in income and wealth within the framework of structural versus individual characteristics. Special attention paid to economic development, labor markets, the educational system, and the state. Pre: 126 or permission of instructor. Starkey

**464 Comparative Economic Systems** (I or II, 3) Theory and evidence concerning the influence of economic systems (capitalism, planned socialism, and market socialism) on national economics performance (growth, development, efficiency, equity, stability) and international economic relations (trade and finance). (Lec. 3) Pre: 125 or 126 or permission of instructor. Burkett

**503 Development of the United States Economy** (I, 3)

**512 History of Economic Analysis** (II, 3)

**515, 516 Economic Research** (I and II, 1-3 each)

**527 Macroeconomic Theory** (I, 3)

**528 Microeconomic Theory** (I, 3)

**529 (or LRS 529) Human Resource Economics I** (I, 3)

**530 (or LRS 530) Human Resource Economics II** (II, 3)

**532 Industrial Organization and Public Policy** (II, 3)

**538 International Economics** (I or II, 3)

**543 Public Finance and Fiscal Policy** (I, 3)

**552 Monetary Theory and Policy** (II, 3)

**566 Economic Planning and Public Policy in Developing Nations** (II, 3)

**575 Introduction to Mathematical Economics** (I, 4)

**576 Econometrics** (II, 4)

**590 Principles of Economics** (I and II, 3)

**595 Problems of Modernization in Developing Nations** (II, 3)

## Education (EDC)

Chairperson: Professor Long

**102 Introduction to American Education** (I and II, 3) Introduction to the fundamental structure, functions, and problems of American education. Emphasis on education as both a socio-cultural phenomenon and an embodiment of philosophical commitments. (Lec. 3) Staff (S)

**279 Career Development Seminar** (I and II, 1) Individualized approach to career concerns, skill identification, self-awareness, career

development theory, decision-making. Emphasis on understanding long/short-term goals. Staff

**302 Topics in Educational Studies** (I and II, 3) Consideration of basic purposes, values, and changes in American education as a means of analyzing selected topics drawn from foundational studies in education. Topics vary. (Lec. 3) Pre: sophomore standing or permission of instructor. Staff

**312 The Psychology of Learning** (I and II, 3) An analysis of learning with emphasis on principles and procedures which are applicable to any human teaching and learning situation. (Lec. 3) Pre: PSY 113. Staff (S)

**313 The Psychology of Learning** (I and II, 3) Parallels 312. Integrated series of professional laboratory experiences. (Lec. 3, Lab. 1) Pre: 102 and PSY 113. Required for and open only to students admitted into the general teacher education curriculum. Staff

**329 Music for the Elementary School Teacher** See Music 329.

**335 Interdisciplinary Studies in Comparative Literature** See Comparative Literature Studies 335.

**367 School Health Program** See Health 367.

**371 Educational Measurements** (I and II, 3) An analysis of concepts and procedures involved in creating, selecting, summarizing and using tests and other measurement devices in educational settings. (Lec. 3) Pre: 312 or 313. Staff

**372 Educational Measurements** (I and II, 3) Parallels 371. Integrated series of professional laboratory experiences. (Lec. 3, Lab. 1) Pre: 102 and concurrent registration in 313. Required for and open only to students admitted into the general teacher education curriculum. Staff

**401 Development and Utilization of Instructional Materials** (I and II, 3) Methods of developing and making classroom application of selected materials: non-projected, projected, and audio. Specific attention to utilization in the social sciences, English, reading, the natural sciences, the humanities, arithmetic, and mathematics. (Lec. 1, Lab. 4) Pre: senior standing and six hours of education. Howard

**402 The Education of Special Needs Students** (I and II, 3) Legislative, judicial, social, and psychological issues related to the assessment, identification and remediation of special needs students' problems in the regular and special education classroom. (Lec. 3) Pre: PSY 232 or HCF 200; EDC 312. Staff

**403 History of Education** (I, 3) Study of main currents of educational thought in historical perspective; relevance of educational movements and practices of the past to the contemporary school. (Lec. 3) Pre: junior standing. Staff

**407 Philosophy of Education** (I and II, 3) Examines influence of philosophical ideas upon education. Questions on reality, knowledge, and value examined from different views to analyze controversial issues in theory and practice. (Lec. 3) Pre: junior standing. Russo

**410, 411 Seminar and Supervised Field Practicum in Education of the Aging** (I and II, 3 each) Adult educational methods as applied to older adults, including pre-retirement education, current education programs for the elderly, and evaluation of educational activities with the aging. Supervised field practicum of 150 hours. (Lec. 2, Lab. 3) Pre: 581 or permission of department. Staff

**424 Teaching of Reading** (I and II, 3) Philosophy, materials and methods underlying the teaching of reading with special emphasis upon developing understanding. (Lec. 3) Pre: 313 or graduate standing. Bumpus and McGuire

**425 The Use of Trade Books in the Reading Program** (I, 3) Understanding and using children's literature as an extension of elementary school textbooks with emphasis upon broadening the classroom teacher's instructional philosophy. (Lec. 3) Staff

**427 Methods and Materials in Elementary Teaching I** (I and II, 3) Language arts/reading principles and practices of guiding children in skillful use of basic means of communication (speaking, listening, writing, and reading). (Lec. 3) Pre: PSY 113 and 232, EDC 313, concurrent registration in EDC 428, permission of department. Open only to students in elementary education curriculum. Not for graduate degree program credit. Nagel, Nally and Kelly

**428 Methods and Materials in Elementary Teaching II** (I and II, 3) Principles and practices of developing skills and knowledge in social studies, math, and science with elementary children. (Lec. 3) Pre: PSY 113 and 232, EDC 313, concurrent registration in EDC 427, permission of department. Open only to students in the elementary education curriculum. Not for graduate degree program credit. Nagel, Nally and Kelly

**430 Methods and Materials in Secondary Teaching** (I and II, 3) Principles of education and human sciences as related to curricular materials and classroom situations. (Lec. 3) Pre: 102 and 313. PSY 232, senior standing, and permission of instructor. Open only to students admitted into the secondary education curriculum. Sectioned by academic

major: business, English, mathematics, modern language, science, social studies. Sem. II: Business Administration students only. Not for graduate degree program credit. Staff

✓ **435 The Teaching of Composition**

See Writing 435.

**441 Methods and Materials of Teaching Business Subjects (I, 4)** Current trends in teaching office occupations and social business subjects. (Lec. 4) Not for graduate degree program credit. Staff

✓ **444 Teaching of Agribusiness and Natural Resources (I, 3)** Organization of instructional programs; development of resource units, teaching plans, methods, techniques, and occupational experience programs. (Lec. 3) Pre: 103 and 313. Not for graduate degree program credit. McCreight

**448 (541) Reading in the Content Areas (I, 3)** Emphasis on the development of specialized vocabulary, textbook reading techniques, and other study skills needed to read math, science, social studies, business, and other content area materials. (Lec. 3) Pre: 312 or permission of the department. Bumpus

**450 Introduction to Counseling**

See Human Development, Counseling and Family Studies 450.

**451 Death, Dying and Bereavement**

See Human Development, Counseling and Family Studies 421.

**461 The Mainstreamed Learning Disabled Reader (I and II, 3)** Regulations and procedures, strengths and needs of the elementary and secondary student, understanding and implementing an Individualized Education Prescription (IEP), planning and evaluating instruction and assignments. (Lec. 3) Pre: 424 or permission of department. Staff

**478, 479 Problems in Education (I and II, 0-3 each)** Advanced work in education, conducted as seminars or as supervised individual projects. (Lec. or Lab.) Pre: permission of department. Staff

**484 Supervised Student Teaching (I and II)** Under selected and approved critic teachers, students participate in classroom teaching and other school activities for a period determined by credit to be earned. Areas include: secondary non-vocational, S/U credit; elementary education, S/U credit; home economics, S/U credit; resource development; business; music; theatre. Pre: methods course(s) of department involved. Not for graduate degree program credit. Staff

**485 Seminar in Teaching (I and II, 3)** Practicum for teachers, their immediate problems, use of resource materials, and cooperative help of other members of

seminar. Areas include: secondary non-vocational, elementary education, home economics, resource development, business, music, physical education (S/U only), theatre. (Lec. 3) Pre: concurrently with 484, permission of department. Not for graduate degree program credit. Staff

**486 Student Teaching in Elementary Physical Education (I and II, 6)** Under selected and approved critic teachers, students participate in classroom teaching and other school activities. Pre: methods courses in the department. Not for graduate degree program credit. Staff

**487 Student Teaching in Secondary Physical Education (I and II, 6)** See 486.

**488 Student Teaching in Special Physical Education (I and II, 6)** See 486.

**489 Student Teaching in Health Education (I and II, 6)** See 486.

**501 Comparative Education in International Perspective (I or II, 3)**

**502 The Modern Curriculum Movement (I, 3)**

**503 Education in Contemporary Society (II, 3)**

**504 Adult Basic Education (I and II, 3)**

**505 Leadership Development in Adult Programs (I or II, 3)**

**509 Critique of Public Policy in Human Services and Education (I and II, 3)**

**510 Practicum in Incorporating Televised Media (I, 3)**

**511 Evaluation of Film and Recorded Material (I, 3)**

**512 Organization and Administration of Audiovisual Programs (II, 3)**

**513 Research and Theory in Instructional Technology (II, 3)**

**514 Current Trends in Elementary Education (I, 3)**

**515 Discipline and Youth in Schools (I and II, 3)**

**516 Teaching English as a Second Language to Adults (II, 3)**

**518 Teaching Science in the Elementary School (I or II, 3)**

**520 Teaching of Arithmetic (I, 3)**

**521 Teaching Basic Reading to Adults (I or II, 3)**

**522 Microcomputer Applications in the Classroom (I and II, 3)**

**528 Teaching Language Arts (II, 3)**

**529 Foundations of Educational Research (I and II, 3)**

**530 Qualitative Evaluation (I or II, 3)**

**531 School-Home Relations (I or II, 3)**

**534 Mathematics in the Secondary School (II, 3)**

**535 Classroom Observation and Evaluation (I or II, 3)**

**538 Teaching the Gifted and Talented (I or II, 3)**

**539 Evaluation and Monitoring of Occupational Training Programs (I or II, 3)**

**540 (or PSY 540) Learning Disabilities: Assessment and Intervention (SS, 3)**

**542 Methods for Challenging the Gifted Reader (I and II, 3)**

**548 Applications of Reading in the Content Areas (II, 3)**

**561 Analysis of Reading Disabilities (I, 3)**

**562 Techniques in Remedial Reading (II, 3)**

**563 Teaching Reading to Multicultural Populations (I, 3)**

**565 Analysis and Evaluation of Current Research in Reading (I, 3)**

**566, 567 Practicum in Reading (I and II, 3 each)**

**569 Middle School Curriculum (SS, 3)**

**570 Elementary School Curriculum (II, 3)**

**571 The Secondary School Curriculum (II, 3)**

**572 Cooperative Supervision (I and II, 3)**

**574 Current Trends in Secondary Education (I and II, 3)**

**575, 576 Supervised Field Study and Seminar in Elementary or Secondary Education (I and II, 3 each)**

**577 Organization and Administration in Elementary School (I, 3)**

**580 Organizing and Administering Youth Programs (I or II, 3)**

**581 Administering Adult Programs (I or II, 3)**

**582 Instructional Systems Development for Adult Programs (I, 3)**

**583 Planning Design and Development of Adult Learning Systems (I, 3)**

**584 The Adult and the Learning Process (I and II, 3)**

**585 Seminar on Leadership for Youth and Adult Programs (II, 3)**

**586, 587 Problems in Education (I and II, 0-3 each)**

**588, 589 Supervised Field Practicum and Seminar in Youth and Adult Education (I and II, 3 each)**

**594 Organization and Supervision of Reading Programs (II, 3)**

**595 Workshop on the Use of the Newspaper in the Classroom (SS, 1)**

**596 (or HCF 562) Organization Development in Education (II, 3)**

## Electrical Engineering (ELE)

Chairperson: Professor Scharf

**205 Microprocessor Laboratory (I, II, 3)** Hands-on familiarization with computer and microprocessor software and hardware. Computer architecture and interfacing with input and output devices. (Lec. 1, Lab. 4) Pre: permission of instructor and MTH 141 which may be taken concurrently. Staff

**210 Introduction to Electricity and Magnetism (I, 3)** Static electric and magnetic field; Gauss's and Coulomb's laws; capacitance and inductance. Behavior of electric charges in stationary and moving fields.

Lumped vs. distributed parameters, electric and mechanical circuit concepts, topological circuit principles, and circuit theorems. (Lec. 3) Pre: MTH 142 and PHY 213. Staff

**211 Linear Systems and Circuit Theory I** (I, 3) Application of Kirchoff's laws and mathematical models for circuit elements to predict responses of electrical circuits to input signals and to initial condition. Complexity is limited to first and second order differential equations. (Lec. 3) Pre: MTH 142 or PHY 214. Staff

**212 Linear Systems and Circuit Theory II** (II, 3) Continuation of 211 including analysis of more complicated circuits by mesh and node methods, phasor methods for the sinusoidal steady state, and Laplace transform techniques. (Lec. 3) Pre: 211. Staff

**214 Introductory E.E. Laboratory** (I, 1) Principles of measurement, theory of errors of measurement. Treatment and presentation of data. Concepts of modeling and models. Experimental practices and procedures. (Lab. 3) Pre: 211 to be taken concurrently. Staff

**220 Passive and Active Circuits** (II, 3) Electrical circuit laws and theorems, transient and steady state response, phasors, frequency response, resonance. Diode and transistor circuits, digital logic devices. (Lec. 3) Not for students majoring in electrical engineering. Pre: PHY 214 or ELE 210. Staff

**221 Electronic Instruments and Electromechanical Devices** (I, 3) Amplifiers, frequency response, feedback, field effect transistors, operational amplifier applications, electrical measurements. Magnetic circuits, transformers, electromechanical transducers, and systems, DC and AC machines. (Lec. 3) Not for students majoring in electrical engineering. Pre: 220. Staff

**313 Linear Systems** (I, 4) Fourier series, Fourier transform, bilateral Laplace transform, transfer function, transient and steady state response, natural response and stability, signal flow graphs, convolution integral, introduction to state-space analysis. (Lec. 3, Lab. 3) Pre: 212. Staff

**314 Linear Systems and Signals** (II, 3) Continuous-time and discrete-time systems, state-space methods and relationship to frequency response; stability criteria; time sampling and Z-transforms, fast Fourier transform, digital filtering; applications to communication, control, signal processing. (Lec. 3) Pre: 313. Staff

**322 Electromagnetic Fields I** (I, 3) Electrostatics and magnetostatics, forces on charged particles. Analysis employs vector algebra

and vector calculus in orthogonal coordinates. Simple applications to engineering problems. (Lec. 3) Pre: MTH 243 and ELE 210. Staff

**323 Electromagnetic Fields II** (II, 3) Magnetostatics continued. Introduction to electrodynamics. Maxwell's equations, wave equation, plane wave propagation, reflection and refraction phenomena. (Lec. 3) Pre: 322. Staff

**331 Introduction to Solid State Devices** (I, 3) Properties of solids, chiefly semiconductors, which are utilized in modern electronic devices. The physics of these materials and devices is stressed, but some time is devoted to fabrication technology and applications. (Lec. 3) Pre: PHY 341 or equivalent. Staff

**342 Electronics I** (II, 4) Introduction to diode, transistor, FET and vacuum tube circuits, equivalent circuits, amplification, stability, small and large signal behavior. (Lec. 3, Lab. 3) Pre: 211 and 215. Staff

**391, 392 Honors Work** (I and II, 1-3 each) Independent study and seminar-type work under close faculty supervision. Discussion of advanced topics in electrical engineering in preparation for graduate work. Pre: junior standing and permission of department. Staff

Prerequisites for all 400-, 500-, and 600-level electrical engineering courses: mathematics through calculus (MTH 243) and at least 6 credits in circuit theory and 3 credits in electromagnetic fields. Additional prerequisites as indicated with each course. Some circuits and fields prerequisites may be waived for 481, 482, 505, 586, 587, 588, and 589 for students with suitable backgrounds.

**401 Lasers, Optical Systems and Communications** (I, 4) Laser fundamentals and light amplification. Diffraction and Fourier optical transformations with applications to engineering. Optical signal processing, holography and applications. Optical systems and communication. (Lec. 3, Lab. 3) Pre: 323 or equivalent. Staff

**405 Digital Computer Design** (II, 3) Hardware implementation of digital computers. Arithmetic circuits, memory types and uses, control logic, basic computer organization, microprogramming, input/output circuits, microcomputers. Pre: 342 or CSC 311. Staff

**408 Computer Organization Laboratory** (II, 3) Experiments with minicomputers and microprocessors. Operation of arithmetic units, data paths, control units, I/O memory and microprogramming. (Lec. 1, Lab 5) Pre: 205 and permission of instructor. Tufts

**417 Direct Energy Conversion** (II, 3) Physical understanding of processes by which energy is converted directly to electricity. Fuel cells and thermoelectric, thermionic, photovoltaic, and magnetohydrodynamic generators. (Lec. 3) Pre: background in electricity and magnetism, thermodynamics of fluid systems and modern physics; permission of instructor. Staff

**427 Electromechanical Devices** (I, 4) Principles of electromechanical energy conversion. Development of models for state response, natural response and stability, signal flow graphs, convolution integral, and sensors. (Lec. 3, Lab. 3) Pre: 313, 322. Staff

**432 Electrical Engineering Materials** (II, 4) Continuation of 331. Electronic and optical properties of materials mainly semiconductors, applied to the performance and design of electronic devices. Measurements and analysis of these properties will be performed in the laboratory. (Lec. 3, Lab. 3) Pre: 331 or equivalent. Staff

**436 Communication Systems** (II, 3) Representation of signals and noise. Basic principles of modulation and demodulation. Waveform and digital transmission systems. (Lec. 3) Pre: 313 and 314 or equivalent knowledge of linear circuit theory, elementary electronics and transform methods. Staff

**443 Electronics II** (I, 5) Continuation of 342. Application of signal flowgraphs as an aid to design. Thermal stability of stages. Applications of circuit analysis program, ECAP. Design of multiple transistor circuits. Feedback. (Lec. 3, Lab. 5) Pre: 342. Staff

**444 Electronics III, Pulse and Digital Circuits** (II, 4) Extension of the fundamental ideas of 342 and 443 to the analysis and design of pulse forming and switching circuits. Piece-wise linear approach to the nonlinear behavior of electronic devices. (Lec. 3, Lab. 3) Pre: 443. Staff

**457 Feedback Control Systems** (I, 3) Fundamental techniques for the analysis and design of linear feedback systems. Stability, sensitivity, performance criteria, Bode diagrams, Nyquist criterion, root locus techniques, state variables, and compensation methods. (Lec. 3) Pre: 313. Staff

**458 Systems Laboratory** (II, 3) Analytical, experimental, and computer simulation studies of typical control, communication, and bio-systems problems. (Lec. 1, Lab. 4) Pre: 457. Staff

**481, 482 Biomedical Engineering Seminar I and II** (I and II, 1 each) Selected topics in biomedical engineering research from current scientific literature. Presented by students and invited staff. Pre: permission of department. 481 not prerequisite for 482. Ohley



**484 Modeling of Physiological Systems (II, 3)** Physiology of selected systems, development of dynamic models to describe their behavior. Projects concerned primarily with the nervous system. Data collected from initial laboratory experiments with animals used for later experiments with analog computer modeling. (Lec. 2, Lab. 3) Pre: 345, MTH 141. In alternate years, next offered 1986. Staff

**491, 492, 493 Special Problems (I and II, 1 each)** Special engineering problems assigned to student according to his or her interests and capabilities. (Lec. or Lab.) Pre: permission of instructor. Staff

**495 Electrical Engineering Practice I (I, II or SS, 3)** Industrial experience in electrical engineering at companies or government laboratories selected by department. Student works on a design or other engineering project under supervision of engineers from industry and URI faculty. Major written report required. Pre: permission of department and completion of the junior year in electrical engineering. Not for graduate degree credit. Staff

**496 Electrical Engineering Practice II (II, 6)** Industrial experience in electrical engineering at companies or government laboratories selected by department. Student works on a major design or other engineering project under supervision of engineers from industry and URI faculty. Pre: 495 and permission of department. Not for graduate degree credit. Staff

- 501 Linear Transform Analysis (I, 3)**
- 502 Nonlinear System Analysis (I or II, 3)**
- 503 (or MCE 503) Linear Control Systems (I or II, 3)**
- 504 (or MCE 504) Optimal Control Theory (II, 3)**
- 506 Digital Signal Processing (II, 3)**
- 509 Systems with Random Inputs (I or II, 3)**
- 510 Communication Theory (II, 3)**
- 511 Electromagnetic Fields (I, 3)**
- 513 Solar to Electric Energy Conversion (II, 3)**
- 514 Microwave Electronics (I or II, 3)**
- 515 Quantum Electronics (I or II, 3)**
- 516 Planetary Electrodynamics (I or II, 3)**
- 520 Fourier Optics (I or II, 3)**
- 523 Fiber Optic Communication Systems (II, 3)**
- 531 Solid State Engineering I (I and II, 3)**
- 532 Solid State Engineering II (I and II, 3)**
- 535 Transistor Circuits (I and II, 3)**
- 536 Semiconductor Electronics (I or II, 3)**
- 537 VLSI System Design (I or II, 3)**
- 538 Principles of Remote Sensing (I or II, 3)**
- 539 Analog VLSI (I or II, 3)**
- 545 (505) Design of Digital Circuits (I, 3)**
- 548 (508) Computer Architecture (I and II, 3)**
- 571 (or OCE 571) Underwater Acoustics I (I, 3)**
- 575 Electroacoustical Engineering I (I and II, 3)**

- 576 Electroacoustical Engineering II (I and II, 3)**
- 581 (or CSC 581) Artificial Intelligence (I or II, 3)**
- 582 (or CSC 582) Robotics (I or II, 3)**
- 583 (or CSC 583) Computer Vision (I, 3)**
- 584 (or EST 584) Pattern Recognition (II, 3)**
- 585 Clinical Engineering (I or II, 3)**
- 586 Biomedical Electronics I (I or II, 3)**
- 587 Biomedical Electronics II (I, 3)**
- 588 Biomedical Engineering I (I, 3)**
- 589 Biomedical Engineering II (I and II, 3)**
- 591, 592 Special Problems (I and II, 1-3 each)**

## Engineering (EGR)

**101 Introduction to Engineering (I and II, 1)** Survey of the field of engineering, the different branches in particular. Introduction to methods and means of computation for solving engineering problems. (Lec. 1) Staff

**102 Basic Graphics (I and II, 1)** Theory of orthographic projection and principles of descriptive geometry, construction of exact drawings of three-dimensional objects including auxiliary views, pictorial drawings, cross-sections and dimensioning, free-hand sketching. (Lab. 3) Bachelder and Staff

**114 Environmental Pollution Control (I or II, 1)** Sources, effects, and control of pollution. Problems involved in water, atmospheric, and solid waste pollution. Technological, political, and economic factors. (Lec. 3 for one-third semester) Pre: high school chemistry or physics. Sussman and Poon

**203 Engineering Graphics (I and II, 1)** Advanced theory of descriptive geometry with applications to engineering problems, including line and plane problems, plane curves, ruled, warped and double-curved surfaces, intersections and development, axonometric and perspective projectives. (Lab. 3) Pre: 102. Bachelder and Staff

**204 Technology and Society (I and II, 3)** Historical development of technology and its interrelationship with social conditions, including a survey of the technological basis of modern society. Technology and its importance for non-engineers and for engineers. Appreciation of their profession for engineers. No prior engineering or science required. (Lec. 3) Staff

## English (ENG)

Chairperson: Associate Professor Reaves

- 103 Introduction to Literature**  
See Writing 103.

**160 (or CLS 160) Masterpieces of Literature (I and II, 3)** Introduction to the major works of world literature. (Lec. 3) Staff (A)

**200 Literature into Film (I and II, 3)** Analysis of themes, techniques, and form in literature and film aimed at developing critical appreciation of printed and film narratives. Emphasis will alternate between fiction and drama. May not be repeated. Staff

**205 Creative Writing (I and II, 3)** Various types of creative composition: essays, stories, and poetry. Students analyze work by class members and by professional writers. Only students with an aptitude for writing should elect this course. (Lec. 3) Pre: permission of instructor. Staff

**232 The Evolution of the English Language (I and II, 3)** The history of English from its German origins, through the Norman Conquest, the Renaissance, and the Age of Enlightenment. Special attention to the cultural forces which molded a standard dialect. (Lec. 3) Staff (S)

**241, 242 American Literature (I and II, 3 each)** 241: Selections from American literature, beginnings to the mid-nineteenth century. 242: Selections from American literature, mid-nineteenth century to the present. (Lec. 3) 241 not prerequisite for 242. Staff (A)

**243 The Short Story (I and II, 3)** Critical study of the short story from the early nineteenth century to the present. (Lec. 3) Staff (A)

**245 Black Literature: 1700—1940 (I and II, 3)** Survey of Afro-American literature 1700—1940. Social, political, and cultural thought of such writers as Wheatley, Chesnut, Dubois, Toomer, Hughes, and growth of racial consciousness from slavery to the Harlem Renaissance. Non-American writers occasionally may be included. (Lec. 3) Staff (A)

**246 Black Literature: 1940 to Present (I and II, 3)** Study of major contributions to black literature from 1940 to the present. Primary emphasis on American writers. (Lec. 3) Staff (A)

**251, 252 English Literature (I and II, 3 each)** 251: Selections from English literature, beginnings to 1798. 252: Selections from English literature, 1798 to the present. Staff (A) for 251; (A) (F) for 252.

**260 Women and Literature (I and II, 3)** Critical study of selected topics. (Lec. 3) Staff

**263 The Poem (I and II, 3)** Introduction to the study of poetry. (Lec. 3) Staff (A)

**264 The Drama (I and II, 3)** Introduction to the study of drama. (Lec. 3) Staff (A)

**265 The Novel** (*I and II, 3*) Introduction to the study of novels. (Lec. 3) Staff (A)

**270 Literature of the Bible** (*I and II, 3*) Introduction to poetry and narrative in the Old Testament and the Apocrypha, primarily in the Authorized (King James) Version. (Lec. 3) Staff

**280 Shakespeare** (*I and II, 3*) Introduction to the major plays and poetry of Shakespeare. (Lec. 3) Staff (A)

**305 Advanced Creative Writing** (*I and II, 3*) Provides further training for students especially talented in creative writing. Increased emphasis on independent projects in longer forms of prose and poetry. (Lec. 3) Pre: 205 and permission of department. Staff

**310 Techniques of Critical Writing** (*I and II, 3*) Practice in the writing of literary criticism. Methods of literary analysis illustrated and applied to specific works. (Lec. 3) Staff

**330 The Structure of American English** (*I and II, 3*) A comparison of prescriptive and descriptive grammars and their effect on our attitudes concerning American English. The influence of contemporary language studies on literary criticism and the teaching of English. (Lec. 3) Staff (S)

**335 Interdisciplinary Studies in Comparative Literature**  
See Comparative Literature Studies 335.

**336 The Language of Literature** (*I and II, 3*) An introduction to those linguistic theories which have recently been applied to literary style, meaning and evaluation. Intensive study of the language of a particular writer or work. (Lec. 3) Staff

**337 Varieties of American English** (*I and II, 3*) A study of the regional and social varieties of American English with emphasis on and field work in New England dialects. (Lec. 3) Staff

**340 Literary Heritage of New England to 1860** (*I and II, 3*) Literature of New England through the colonial, national, and romantic periods to the Civil War. Field trips will be taken to important literary sites. (Lec. 3) Staff

**347 American Romanticism** (*I and II, 3*) Poetry and prose of the American Romantic Movement. Focus on Irving, Poe, Emerson, Thoreau, Hawthorne, Melville, and others. (Lec. 3) Staff

**348 American Realism** (*I and II, 3*) Major developments in American Realism and Naturalism. Emphasis on the work of Twain, Howells, Crane, James, Dreiser. (Lec. 3) Staff

**349 Modern American Literature** (*I and II, 3*) Poetry, drama, and fiction of the period during and since World War I. Emphasis on

major figures such as Frost, Eliot, Stevens, O'Neill, Faulkner, Hemingway, and others. (Lec. 3) Staff

**350 Literary Theory and Criticism**  
See Comparative Literature Studies 350.

**366 Greek and Roman Drama** (*I, 3*) Survey of Greek and Roman drama with special emphasis on art and achievement of major dramatists: Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca. (Lec. 3) Staff (F)

**367 The Epic** (*I and II, 3*) Studies in epic literature from Homer to the modern period. Historical emphasis will vary with instructor. (Lec. 3) Staff

**370 British Literature of the Middle Ages** (*II, 3*) Introduction to various types of medieval literature, usually read in modern English versions. Chronicle and romance, lyric and satire, visionary and homiletic writings, drama. (Lec. 3) Staff

**371 British Literature of the Renaissance I** (*I and II, 3*) Study of developments in sixteenth century poetry and prose with emphasis on the nondramatic works of More, Wyatt, Sidney, Spenser, Marlow, Shakespeare, and others. (Lec. 3) Staff

**372 British Literature of the Renaissance II** (*I and II, 3*) Study of developments in prose and poetry of the seventeenth century, especially the works of Bacon, Donne, Johnson, Browne, Herbert, Marvell, Milton, and others. (Lec. 3) Staff

**374 British Literature of the Enlightenment** (*I and II, 3*) Study of major trends in verse, satire, prose, drama, and fiction from the late seventeenth and eighteenth centuries in such writers as Dryden, Congreve, Swift, Johnson, and Sterne. (Lec. 3) Staff

**376 British Romanticism** (*I and II, 3*) Major poetry and significant non-fiction prose of Burns, Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, and others. (Lec. 3) Staff

**377 Victorian Literature** (*I and II, 3*) Poetry, non-fiction prose, and novels from the early Victorian to the Edwardian periods. Emphasis on writers such as Carlyle, Browning, Dickens, Tennyson, Arnold, Hardy, Hopkins, Wilde, and others. (Lec. 3) Staff

**379 Modern British Literature** (*I and II, 3*) Poetry, drama, non-fiction prose, and selected fiction of the modern period. Emphasis on the work of Conrad, Joyce, Lawrence, Yeats, Thomas, and others. (Lec. 3) Staff

**380 Chaucer** (*I and II, 3*) Selections from Chaucer's major poems, read in Middle English. (Lec. 3) Staff

**384 Milton** (*I and II, 3*) Poetry and prose of John Milton, with special emphasis on *Paradise Lost*. (Lec. 3) Staff

**385 Women Writers** (*I and II, 3*) Analysis of the poetry, drama, or fiction of women writers. Emphasis on nineteenth-century, twentieth-century, or contemporary authors. Course may be repeated for credit when taken with different emphasis. (Lec. 3) Staff

**394, 395 Independent Study** (*I and II, 1-3 each*) Extensive individual study and research, culminating in a substantial essay. Pre: permission of department. Total cumulative hours permitted: 6. Staff

**397 The Literary Landscape of Britain** (*SS, 3*) Taught in England, second summer session. Examines impact of English social and natural landscape on and their treatment in selected literary works. Usually taught in conjunction with HIS 397. (Lec. 3) Staff (F)

**399 Special Topics in Literature** (*I and II, 3*) Specialized topics in the study of literature offered by specialists in the field. (Lec. 3) Staff

**444 Images of Blacks in American Literature** (*I and II, 3*) Writings about blacks by both black and non-black American authors. (Lec. 3) Staff

**446 Modern Drama** (*I and II, 3*) Studies in representative works by modern American, British, Irish, and continental playwrights. (Lec. 3) Staff

**447 Modern British and American Poetry** (*I and II, 3*) Studies in major contributions and movements in British and American poetry from 1900 to present. (Lec. 3) Staff

**448 Traditions of the American Novel** (*I and II, 3*) Studies in the development of the American novel up to 1900. (Lec. 3) Staff

**458 Traditions of the British Novel** (*I and II, 3*) Studies in the development of the British novel up to 1900. (Lec. 3) Staff

**468 Traditions of the Continental Novel** (*I and II, 3*) Studies in major developments of the European novel (excluding England and Ireland) up to 1900. (Lec. 3) Staff

**469 The Modern Novel** (*I and II, 3*) Studies in major developments in the novel since 1900, with primary emphasis on the British, American, or the continental novel. (Lec. 3) Staff

**472 Shakespeare's Plays** (*I and II, 3*) Critical studies in Shakespeare's drama. May be repeated once with alternate syllabus. (Lec. 3) Staff

**477 Traditions of British Drama** (*I and II, 3*) Studies in major developments in British drama up to 1900. (Lec. 3) Staff

**485 American Authors** (I and II, 3) Intensive study of the work of one or two outstanding American writers. May be repeated, barring duplication of writers being studied. (Lec. 3) Staff

**486 British Authors** (I and II, 3) Intensive study of the work of one or two outstanding British writers. May be repeated, barring duplication of writers being studied. (Lec. 3) Staff

**499 Senior Seminar** (I and II, 3) Intensive study of literature and literary criticism as a discipline through selected works and authors, English and American, culminating in a substantial research project. (Lec. 3) Open only to seniors concentrating in English. Staff

**510 Bibliography and Literary Research** (II, 3)

**530 History of the English Language** (I, 3)

**531 History of Critical Theory** (II, 3)

**532 Modern Literary Criticism** (I, 3)

**534 Structure of the English Language** (I or II, 3)

**535 Old English** (I, 3)

**536 Problems in Linguistics and Literature** (II, 3)

**540 Modern American Novel** (I, 3)

**545 Problems in American Realism and Naturalism** (I, 3)

**546 Problems in American Romanticism** (II, 3)

**547 Early American Literature to 1800** (I, 3)

**548 American Poetry to 1900** (I, 3)

**549 Modern American Poetry** (II, 3)

**550 Middle English Literature** (II, 3)

**551 The Metaphysical Poets** (I, 3)

**554 Modern British Poetry** (I, 3)

**555 Modern British Novel** (I, 3)

**556 English Literature of the Sixteenth Century** (I, 3)

**557 English Literature of the Seventeenth Century** (II, 3)

**558 English Literature of the Eighteenth Century** (I, 3)

**559 English Literature of the Romantic Period** (II, 3)

**560 English Literature of the Victorian Period** (II, 3)

**561 Modern European Novel** (II, 3)

**570 Anglo-Irish Writers** (II, 3)

**571 Problems in Chaucer** (I, 3)

**573 Problems in Shakespeare** (II, 3)

**574 The Scots' Poetic Tradition through Robert Burns** (II, 3)

**575 Modern Southern Literary Renaissance** (II, 3)

**576 English Novel of the Eighteenth Century** (I, 3)

**577 English Novel of the Nineteenth Century** (II, 3)

**578 Problems in Milton** (II, 3)

**590 Selected Topics** (I and II, 3)

## Environmental Health Science (EHS)

Chairperson: Professor Worthen (Pharmacognosy and Environmental Health)

**562 Interdisciplinary Seminar** (I, 3)

**563 Public Health Administration** (II, 3)

## Experimental Statistics (EST)

Chairperson: Associate Professor Lamagna

**220 Statistics in Modern Society** (I and II, 3)

Elementary concepts in sampling, polls, surveys, random samples. Foundations of statistical inference; estimation, comparison prediction. Statistics for the consumer, quality of data, credibility of statistical evidence. Environmental measurements and experiments. (Lec. 3) Staff (M)

**407 Introductory Biostatistics** (I or II, 3)

Statistical methods applicable to health sciences. Data presentation. Vital statistics and life tables. Fitting models to health data. Testing, estimation, analysis of cross-classifications, regression, correlation. (Lec. 3) Pre: MTH 109. Not open to students who have credit in 408, 409. Staff

**408 Statistical Methods in Research I**

(I and II, 3) Descriptive statistics, presentation of data, averages, measures of variation, skewness, kurtosis. Elementary probability, binomial and normal distributions. Sampling distributions. Statistical inference, estimation, confidence intervals, testing hypotheses, linear regression, and correlation. (Lec. 3) Pre: MTH 109. Not open to students who have credit in 407, 409. Staff

**409 Statistical Methods in Research I** (I and II, 3) Same as 408, but for students who have better mathematical preparation. (Lec. 3) Pre: MTH 142. Not open to students who have credit in 407, 408. Staff

**412 Statistical Methods in Research II** (I or II, 3) Multiple linear regression and correlation analysis, curvilinear regression. Analysis of variance and covariance. Analysis of enumerative data. Some nonparametric methods. (Lec. 3) Pre: 407 or 408 or 409. Staff

**413 Data Analysis** (II, 3) Exploring data from experimental trials, sample surveys, multivariate studies; weighing chances, detecting patterns, identifying outliers, finding models; elementary computational procedures. (Lec. 3) Pre: 407 or 408 or 409 and CSC 201. Staff

**491 Directed Study in Experimental Statistics** (I and II, 1-3) Advanced work in experimental statistics. Conducted as supervised

individual projects. Pre: permission of department. S/U credit. Staff

**492 Special Topics in Experimental Statistics** (I or II, 3) Advanced topics of current interest in experimental statistics. (Lec. 3) Pre: permission of department. Staff

**500 Nonparametric Statistical Methods** (I or II, 3)

**501 Analysis of Variance and Variance Components** (I or II, 3)

**502 Applied Regression Analysis** (I or II, 3)

**517 (or PSY 517) Small N Designs** (II, 3)

**520 Fundamentals of Sampling and Applications** (I or II, 3)

**532 (or ASC 532) Experimental Design** (II, 3)

**541 Multivariate Statistical Methods** (I or II, 3)

**542 Discrete Multivariate Methods** (I or II, 3)

**550 Ecological Statistics** (I or II, 3)

**576 (or ECN, REN 576) Econometrics** (I, 3)

**584 (or ELE 584) Pattern Recognition** (I or II, 3)

**591 Directed Study in Experimental Statistics** (I and II, 1-3)

**592 Special Topics in Experimental Statistics** (I or II, 3)

## Film Studies

Coordinator: Associate Professor Keller

### Art

374 Topics in Film and Photography

### English

200 Literature into Film

### History

358 Recent America in Film

### Foreign Language Film

327 Foreign Narrative Film

328 Rhetoric of Film

## Finance (FIN)

Chairperson: Associate Professor Lord (Finance and Insurance)

**301 Financial Management** (I and II, 3) An analysis of the investment and financing issues facing large and small corporate and non-corporate business. Emphasis is on financial planning and decision-making. (Lec. 3) Pre: ECN 126, ACC 202, and MGS 202 or permission of instructor. Staff

**322 Security Analysis** (I and II, 3) Problems in investing funds from the point of view of individual and institutional investors. Particular attention is given to analysis of current investment theories. (Lec. 3) Pre: 301 or concurrent with 301. Staff

**331 Financial Institutions and Markets** (I and II, 3) Comprehensive analysis of financial institutions and the markets in which

they operate. Emphasis on the internal operations of the institutions. (Lec. 3) Pre: ECN 126, ACC 202, and MGS 202 or permission of instructor. Staff

**341 Fundamentals of Real Estate (I or II, 3)** Analysis of real estate principles. An examination of land utilization, valuation, financing techniques, urban development, property rights, markets, and government regulation. (Lec. 3) Pre: ECN 126. Staff

**401 Advanced Financial Management (I or II, 3)** Intensive research on selected current topics relating to the financial management of the firm. (Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff

**420 Speculative Markets (I or II, 3)** Examination of the concepts of forward pricing and its applications to the area of commodity and financial futures and options. (Lec. 3) Pre: 301 or permission of instructor. Staff

**425 Portfolio Theory and Management (I or II, 3)** Examination of portfolio theory and current portfolio management practices from the individual and institutional view. Techniques for portfolio building, management, and performance evaluation are discussed. (Lec. 3) Pre: 322 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff

**431 Advanced Financial Institutions and Capital Markets (I or II, 3)** Intensive research on selected current topics relating to financial institutions and markets. (Lec. 3) Pre: 301, 331 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff

**433 Bank Financial Management (I or II, 3)** Nature of the financial decisions facing the management of an individual bank. Current bank financial practices, research, and appropriate banking models considered. (Lec. 3) Pre: 301, 331 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff

**442 Real Estate Finance (I or II, 3)** The methods and instruments used to finance real estate; the terms and sources of funds; investment opportunities and risk analysis in real estate. (Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff

**452 Multinational Finance (I or II, 3)** Methods of financing multinational corporations. Foreign exchange, translation of financial statements, multinational funds flow and international liquidity, international financial reporting and tax policy, international money, stock and bond markets. (Lec. 3) Pre: 301 or permission of

instructor. Not for graduate credit for students in the College of Business Administration. Staff

**460 Managerial Economics (I or II, 3)** Applications of economic theory and method to business problems relating to capital budgeting, demand, production, cost, and financial forecasting. Emphasis is on managerial decision-making. (Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff

**491, 492 Directed Study (I and II, 1-3 each)** Directed readings and research work involving financial problems under the supervision of members of the staff. Plan of study required. Pre: permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff

**540 Theory of Finance (I or II, 2)**

## Fisheries and Marine Technology (FMT)

Chairperson: Professor Meade (Fisheries, Aquaculture and Pathology)

**013 Shipboard Work (I, 3)** Principles and practices of vessel operations. Basic navigation, shiphandling, routine and emergency procedures. Introduction to vessel systems. Actual operations in port and at sea. Radio-telephone communications including preparations for FCC licensing. (Lec. 1, Lab. 6) Gamache and Stout

**014 Shipboard Work II (II, 1)** Work aboard training vessels at sea and in port. Rigging and working common gear used in the commercial fishing industry. (Lab. 3) Pre: 013, 101 and 118. Gamache

**020 Practical Twinework (I, 1)** Development of practical twinework skills with major emphasis on mending and patching wings, bellies, and other net sections. Introduction to webbing construction and basic net configurations. (Lab. 3) Hillier

**101 Shipboard Safety (I, 3)** Fire prevention, firefighting, accident prevention, and first aid medical treatment at sea; marine distress and emergency communications; abandonment, search-and-rescue operations. (Lec. 3) Stout

**110 Marine Technology (II, 4)** Application of basic principles of statics, dynamics, heat, light and sound to problems encountered in vessel operations, fishing gear, fish handling, and engineering systems. (Lec. 3, Lab. 3) Pre: MTH 109. Recksiek

**118 Introduction to Commercial Fisheries (I, 3)** Survey of world, United States, New England fisheries; commercial species,

exploitation and use. Introductory fisheries science. Principal commercial fishing methods, vessels, and gear. (Lec. 3) Recksiek

**121 Fishing Gear I (II, 3)** Detailed study of bottom trawls; emphasis on construction, repair, and use of different rigs and net designs. (Lec. 2, Lab. 3) Pre: 013. Hillier

**131 Seamanship (II, 3)** Principles and practice of seamanship. Watch standing, vessel maneuvering, rules of the road. Vessel maintenance, rigging safety, wire and fiber rope work. (Lec. 2, Lab. 3) Pre: 013, 101 or permission of instructor. Stout

**222 Fishing Gear II (II, 2)** Detailed study of the purse seine, midwater trawl, gillnet, trap, longline, and dredge. (Lec. 2) Pre: 121. Gamache

**223 Fishing Gear Construction (II, 1)** Construction and repair of representative commercial fishing gear types. Study of hanging, tapering and rigging principles. (Lab. 3) Pre: concurrent registration in 222. Hillier

**235 Fisheries Meteorology (II, 2)** Basic practical meteorology and weather forecasting for the mariner. Tropical revolving storms; icebergs, ice, and icing-up conditions. World meteorological organization. (Lec. 2) Not open to students who have taken GMA 403. DeAlteris

**241 Diesel Engineering Technology (I, 4)** Detailed study of marine diesel engines. Emphasis on principles and practice of operation, maintenance, and testing of systems, engines and components. (Lec. 3, Lab. 3) Pre: 110 or PHY 111 or permission of instructor. Wing

**242 Fluid Power Technology (II, 4)** Detailed study of fluid power systems with application to marine use. Emphasis on principles and practice of design, selection, operation, and maintenance of systems and components. (Lec. 3, Lab. 3) Wing

**261 Marine Electronics (I, 4)** Basic electricity applied to fishing. Basic solid state and vacuum tube electronics, DC and AC machinery, ship wiring, communications, depth and fish finders, radar, electronic navigation systems. Noise control, siting, and preventive maintenance of equipment. (Lec. 3, Lab. 3) Pre: MTH 109, FMT 110 or PHY 112. Amos

**281 Navigation I (I, 4)** Chartwork and dead reckoning. Tides, current and wind effects. Compass error and the deviascope. Position by observation and computation. Navigational instruments and sailings. (Lec. 2, Lab. 4) Pre: MTH 109. DeAlteris

**293 Fishing Operations Practicum (II, 1)** Fishing vessel operation; planning and working nearby fishing grounds for principal



commercial species; rigging and handling gear and vessel. Conducted at sea in nearby waters. (Pract. 6) Pre: 014, 121 and 131. Gamache and Hillier

**351 Fish Preservation (I, 3)** Introduction to microbiology and biochemistry of fish spoilage. Preservation methods at sea and ashore including icing, mechanical refrigeration, freezing, salting, smoking, dehydration, canning, plant sanitation, and quality control. (Lec. 3) Staff

**371 Ship Technology (II, 3)** Principles of naval architecture and ship construction applied to smaller vessels, with special emphasis on fishing craft. Basic ship geometry and calculations, stability, powering, and propellers. Construction methods and materials, vessel planning. (Lec. 3) Pre: MTH 109, PHY 111 or FMT 110, or permission of instructor. Stout

**382 Navigation II (II, 4)** Celestial navigation and nautical astronomy. Position fixing and compass error determination by observation of celestial bodies. The sextant and other navigational instruments. Electronic aids to navigation (Lec. 3, Lab. 3) Pre: 261, 281 or permission of instructor. DeAlteris

**391, 392 Special Problems and Independent Study (I and II, 1-3 each)** Special work to meet individual needs of students in various fields of fisheries and marine technology. (Lec. and/or Lab. according to nature of project) Pre: permission of department. Staff

**393 Fishing Operations (II, 3)** Commercial fishing procedures as they relate to the vessel operator in the use of navigation, engineering, vessel layout, economics, marketing, fishing gear, accounting, and on-board fish processing. (Lec. 3) Pre: 281 and 293. Gamache

**452 Industrial Fishery Technology**  
See Animal Science 452.

**515 Fishery Science (I, 3)**

**518 Marine Fisheries Technology (I, 3)**

**521 Fishing Gear Technology (II, 3)**

**591, 592 Special Problems (I and II, 1-3 each)**

## Food Science and Technology, Nutrition, and Dietetics (FSN)

Chairperson: Professor Rand

**150 Food in Affluence and Poverty (II, 3)** Relationships between food and current problems including the world food problem, hunger and malnutrition, food fads and misinformation, food processing and additives, food ecology, food and nutrition improvement programs. (Lec. 3) Eshleman and Cosgrove (S)

**201 Introduction to Food Study (I, 3)** Basic principles of food selection in today's market and preparation to retain maximum nutritive values and palatability. (Lec. 2, Lab. 3) Pre: CHM 124 or 227. Brown

**207 General Nutrition (I and II, 3)** Fundamental concepts of the science of nutrition with application to world, community and personal aspects. (Lec. 3) Staff (N)

**237 Introductory Food Science (I, 3)** Survey of basic principles of food science and technology. (Lec. 3) Rand

**307 Nutrition and Aging (I, 3)** Nutrition of the elderly as affected by metabolic and physiologic factors in aging. Study of the nutritional requirements and status of the elderly as well as the effectiveness of nutrition support systems. (Lec. 3) Pre: 207 or HCF 220, BIO 102 or equivalent. In alternate years, next offered fall 1985. Eshleman

**308 Nutrition in Growth and Pregnancy (I, 3)** Examines current issues in maternal and child nutrition as related to growth and physical development. Discusses specific nutrition-related problems including development of food habits, food consumption patterns, and nutrient requirements. (Lec. 3) Pre: 207, BIO 102 or equivalent. In alternate years, next offered fall 1984. Staff

**309 Nutrition in Obesity and Weight Control (II, 3)** Etiology of weight control examined, emphasis upon the physiological basis of energy balance. Abnormal eating behavior leading to obesity or undernutrition studied, and management protocol evaluated. Nutritionally adequate and effective reducing diets emphasized. (Lec. 3) Pre: 207, BIO 102. Staff

**331 Advanced Food Study (II, 3)** Food systems. Physical and chemical changes occurring in food during preparation, serving and storage. Laboratory application, including assessment of food quality. (Lec. 2, Lab. 3) Pre: 201 or permission of instructor. Brown

**333 Quantity Food Production (I and II, 3)** Application, analysis, and evaluation of producing, distributing, and serving quality food in quantity. Experience in a food service facility. (Lec. 1, Lab. 4) Pre: 201, MIC 201 or 211, senior standing, or permission of department. Staff

**334 Quantity Food Purchasing and Cost Control (I or II, 3)** Production, distribution, storage, cost analysis of food supplies to serve as basis for institutional purchasing by specification. Investigation and analysis of existing purchasing systems. (Lec. 3) Pre: previous or concurrent registration in 333 and senior standing, or permission of department. Staff

**335 Food Service Management (I or II, 3)** Administrative responsibilities in organizing, planning, analyzing, controlling, and evaluating. Technical operations of sub-units in relation to the whole in food service systems. (Lec. 3) Pre: 201, 207 and junior standing, or permission of department. Staff

**345 (or LIB 345) Nutritional Literature and Its Communication (II, 3)** Survey of literature and available resource materials. Written reports and discussion of scientific, social, regulatory, and political developments affecting nutritional status and health. (Lec. 3) Pre: 207 or 237 or permission of department. Dymsha and J. F. Sieburth

**347 Nutritional Evaluation of Food Processing (II, 3)** Effect of processing from origin to consumption upon the nutrient content of food. Emphasis on relationship between food processing and nutrient retention and availability. (Lec. 3) Pre: 207, 237, CHM 124. Gerber and Simpson

**378 Sensory Evaluation of Foods (I, 3)** Nature of the sensory response; chemistry of compounds responsible for flavor and odor; measurement of taste, odor, color, and texture; design and methodology of panel testing. (Lec. 2, Lab. 2) In alternate years. Next offered fall 1984. Cosgrove

**421 Food Analysis (I, 4)** Principles and procedures for the chemical and physical analysis of foods. Emphasis on the determination of common food constituents and the instrumentation for their analysis. (Lec. 1, Lab. 6) Pre: 431. Olney

**431 Biochemistry of Food (I, 3)** Introduction to the chemistry and biochemistry of the essential components common to foods of plant and animal origin. (Lec. 3) Pre: BCP 311 or equivalent. Stauffer and T. Lee

**432 Food Processing (II, 3)** Changes involved in behavior of foods in unit operations such as fermentation, canning, irradiation, freezing, dehydration, and enzyme technology for processing and preservation. Pre: 431 and MIC 211. Rand and Stauffer

**433 Food Quality (II, 3)** Technological problems of procurement, manufacture, transportation, grading, packaging, and storage of food products. Field trips required. (Lec. 2, Lab. 2) Pre: 431 and MIC 211. Cosgrove

**434 Marine Food Processing (II, 4)** Theory and application in processing of finfish, shellfish and seaweed from harvesting to product development, including identification of current issues. (Lec. 3, Lab. 3) Pre: 432 or permission of department. C. Lee, T. Lee, Stauffer

**438 Food Chemistry Laboratory (I, 3)** Principles and techniques of basic and applied food research. Investigation of special food problems. Writing and evaluation of technical reports on research findings. (Lec. 1, Lab. 6) Pre: 431 or permission of department. T. Lee and Stauffer

**441 Advanced Human Nutrition (I, 3)** Comprehensive study of principles of nutrition. Physiological and metabolic processes and interrelationships involving nutrients. Factors affecting nutritional health status and requirements during life span. (Lec. 3) Pre: 207, ZOO 242, BCP 311 or permission of department. Gerber

**444 Nutrition and Disease (II, 3)** Effect of disease on metabolism and nutritional requirements, implications for dietary change and factors affecting acceptance of such change. (Lec. 3) Pre: 441 or permission of department. Caldwell

**447 Food Engineering I**  
See Chemical Engineering 447.

**451, 452 Field Experience in Food and Nutrition (I and II, 1-3 each)** Individual supervised field experiences and seminar in community, educational, government, health-oriented, or commercial activities and services related to food and nutrition. (Lec. and Lab.) Pre: permission of department. Maximum total of 6 credits. Not for graduate degree program credit. Staff

**456 Community Nutrition (II, 4)** Assessment of the role of nutrition and food behavior in community health; study of current nutrition programs; development of an advocacy role in nutrition legislation; program planning, implementation, evaluation. (Lec. 4) Pre: 441 and 444 or permission of instructor. Eshleman

**461 Food Safety (II, 3)** Safety and status of food-borne substances and additives. Chemical-biologic mechanisms and factors influencing toxicity. Toxicological testing methods. Risks vs. benefits. Legal and regulatory aspects. (Lec. 3) Pre: 431 or permission of instructor. Dymysa and T. Lee

**491, 492 Special Projects (I and II, 1-3 each)** Advanced work under supervision of staff member. Arranged to suit individual requirements of student. Pre: senior standing and permission of department. Staff

**502 Physical Chemistry of Food Materials (I, 3)**

**503 Food Science and Nutrition Research Methods (I, 4)**

**505 Marine Foods Seminar (I and II, 1)**

**511, 512 Food Science and Nutrition Seminar (I and II, 1 each)**

**521 Pesticide Chemistry (II, 3)**

**526 (or MCH 526) Lipid Chemistry (I, 3)**

**531 (or HED 531) Teaching of Nutrition (I or II, 3)**

**532 Seafood Quality (II, 3)**

**542 Minerals and Vitamins (II, 3)**

**548 (or CHE 548) Food Engineering II (II, 3)**

**549 (or CHE 549) Food and Biochemical Engineering III (II, 3)**

**575 (or CHE 575) Biochemical Engineering II (II, 3)**

**591, 592 Special Research Problems (I and II, 1-4 each)**

## Foreign Language Film (FLF)

Coordinator: Associate Professor Viglionese

**327 Foreign Narrative Film (II, 3)** The cultural significance of the film in Europe, Latin America, Africa, and Quebec, studied through selected motion pictures with English subtitles, and assigned readings. (Lec. 2, Lab. 4) Not for credit in any major in the Department of Languages. In alternate years, next offered spring 1985. Staff

**328 Rhetoric of Film (II, 3)** Comparative study of major works of two or three film directors of international stature, studied through discussion of selected foreign language motion pictures with English subtitles, lectures and assigned readings. (Lec. 2, Lab. 4) Not for credit in any major in the Department of Languages. In alternate years, next offered spring 1986. Staff

## French (FRN)

Section Head: Associate Professor Chartier

**101 Beginning French I (I and II, 3)** Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior French. Staff (F)

**102 Beginning French II (I and II, 3)** Continuation of 101. Pre: 101 or equivalent. Staff (F)

**103 Intermediate French I (I and II, 3)** Development of facility in reading texts of moderate difficulty; supplemented by further work in grammar, conversation, and composition. (Lec. 3) Pre: 102 or 131 or equivalent. Staff (F)

**104 Intermediate French II (I and II, 3)** Continuation of 103. Pre: 103 or equivalent. Staff (F)

**113 Intensive French III (I and II, 4)** Grammar review, further exercise in conversation and reading of easy texts. (Lec. 4) Two or more years of high school French or permission of instructor. May not be taken concurrently with 103, 104. Staff

**114 Intensive French IV (I and II, 4)** Development of facility in reading texts of moderate difficulty, with continued practice in writing and speaking. (Lec. 4) Pre: 113 or two or more years of high school French or permission of instructor. May not be taken concurrently with 103, 104. Staff

**123 French for Reading Knowledge (I and II, 3)** Grammar and vocabulary emphasized in the first semester, reading of texts of increasing difficulty in the second semester. 123 presupposes no previous knowledge of French. Staff

**131 Refresher Course in French (I and II, 3)** Rapid one-semester review of beginning French structures and vocabulary. For students with one or two years of high school French who are not ready for 103 or higher level. (Lec. 3) Pre: one or two years of pre-college French or permission of section head. Not open to students who have passed 101 or 102. Not for major credit. Staff (F)

**205, 206 Conversation and Composition (I and II, 3 each)** Comprehension of spoken French; speaking with ease and an acceptable accent on assigned topics; oral reports on articles read in newspapers and periodicals, and frequent written compositions. (Lec. 3) Pre: 104 or equivalent. Staff

**208 Preparation for Study in France (II, 3)** Emphasis on listening comprehension and oral expression through class discussion, visiting lecturers, and language laboratory. Required of and restricted to students participating in Orleans Exchange Program. Pre: 205 or equivalent and permission of instructor. Not open to freshmen. Hyland

**301, 302 The Civilization of France (I and II, 3 each)** Geographical, historical, economic, social and aesthetic factors contributing to the cultural development of France. (Lec. 3) Pre: for 301, 206; for 302, 301 or permission of department. Recommended for French majors in the General Teacher Education curriculum. Staff

**305 Composition (I, 3)** Writing of literary French. Frequent compositions and critiques with emphasis on the stylistic devices. Recommended for those concentrating in French. (Lec. 3) Pre: 206 or equivalent. Porter

**306 Oral Expression in French (II, 3)** Discussion, short speech-making, pronunciation, everyday vocabulary, and improvement of conversation. Matters of current interest in French selected by instructor and students. (Lec. 3) Pre: 206 or equivalent. Staff

**317 Grammar (II, 3)** Grammatical concepts and the linguistic means available for their expression. (Lec. 3) Pre: 205 or permission of instructor. Porter

**327 Survey of French Literature from the Middle Ages to 1789 (I, 3)** Survey of major writers and literary movements of French literature from the Middle Ages to 1789. Introduction to poetry and drama as genres. Explication de texte and short papers. Pre: 206 or permission of instructor. Staff (A)

**328 Survey of French Literature from 1789 to Present (II, 3)** Survey of major writers and literary movements of French literature from 1789 to present times. Introduction to the novel as genre. Explication de texte and short papers. Pre: 206 or permission of instructor. Staff (A)

**391 Literature to 1789 in Translation (I and II, 3)** Major developments in French literature from the Middle Ages through 1789. Reading in translation of selected literary works from representative authors. (Lec. 3) May not be taken for credit toward major requirements in French. Kuhn (A)

**392 Nineteenth-Century Literature in Translation (I or II, 3)** Reading in translation of selected literary works from representative nineteenth-century authors. (Lec. 3) May not be taken for credit toward major requirements in French. Kuhn (A) (F)

**393 Twentieth-Century Literature in Translation (I or II, 3)** Reading in translation of selected literary works from representative twentieth-century authors. (Lec. 3) May not be taken for credit toward major requirements in French. Kuhn (A) (F)

**394 Literary Topics in Translation (I or II, 3)** Selected topics in French literature in translation. (Lec. 3) May not be taken for credit toward major requirements in French. Staff

**402 French Phonetics (II, 3)** Introduction to articulatory phonetics, phonetic notation, and phonetic transcription. Rudiments of recognizing and reproducing French intonation patterns. Laboratory in phonetics and intonation. (Lec. 3) Pre: 205 or permission of instructor. Rogers

**411 Medieval Literature (I, 3)** Representative works of the late eleventh century through the fourteenth century. (Lec. 3) Pre: 325 or 326 or permission of instructor. Rogers

**433 Seventeenth-Century Literature (II, 3)** General survey of the writers of the period including Corneille, Molière, Racine, Pascal, and the Moralists. (Lec. 3) Pre: 325 or 326 or permission of instructor. Morello

**443 Eighteenth-Century Literature (I, 3)** Principal literary movements as illustrated by Voltaire, Diderot, Rousseau, and other leading writers. (Lec. 3) Pre: 325 or 326 or permission of instructor. Rothschild

**453 Nineteenth-Century Literature until 1848 (I, 3)** General survey of poets and prose writers of the period including the major Romantics (Lamartine, Vigny, Hugo, Musset, and novelists such as Stendhal and Balzac). (Lec. 3) Pre: 325 or 326 or permission of instructor. Touloudis

**454 Nineteenth-Century Literature since 1848 (II, 3)** General survey of poets and prose writers of the period including the major Realists (Flaubert, Zola) and Symbolists (Baudelaire, Verlaine, Rimbaud). (Lec. 3) Pre: 325 or 326 or permission of instructor. Chartier

**461 Twentieth-Century Theatre (I, 3)** Representative dramatists. (Lec. 3) Pre: 325 or 326 or permission of instructor. Waters

**465 Twentieth-Century Prose (I, 3)** Major prose works of this period including those of Proust, Gide, Mauriac, Colette, Sartre, Camus, the new novelists, and others. (Lec. 3) Pre: 325 or 326 or permission of instructor. Kuhn

**473 French Canadian Literature (I, 3)** Early historical and biographical works, but primarily the novel, poetry, and theatre of the twentieth century. (Lec. 3) Pre: 325 or 326 or permission of instructor. Chartier

**474 Black Literature in French (I, 3)** Authors of Africa and the Diaspora; includes Camara, Cécile, Dadie, Senghor. (Lec. 3) Pre: 325 or 326 or permission of instructor. Waters

**480 Business French (I or II, 3)** Study of concepts and terminology relating to the French business world. Pre: junior standing; completion of or concurrent enrollment in at least one 300-level course in the French language. Morello

**497, 498 Directed Study (I and II, 3 each)** For the advanced student. Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

**501 Advanced Composition (II, 3)**

**503 History of the French Language (II, 3)**

**513 Seminar in Medieval Literature (I, 3)**

**523 Seminar in Sixteenth-Century Literature (I, 3)**

**533 Seminar in Seventeenth-Century Literature (I, 3)**

**544 Seminar in Eighteenth-Century Literature (II, 3)**

**554, 555 Seminar in Nineteenth-Century Literature (I and II, 3)**

**564 Seminar in Modern Poetry (I, 3)**

**565 Seminar in Twentieth-Century Theatre (II, 3)**

**566 Seminar in Twentieth-Century Prose (I, 3)**

**594 Special Topics (I and II, 3)**

## Genetics

Coordinator: Assistant Professor Mottinger

### Aquacultural Science and Pathology

352 General Genetics  
354 Genetics Laboratory

### Botany

352 General Genetics  
454 Advanced Genetics Lab  
554 Cytogenetics  
579 Advanced Genetics Seminar

### Microbiology

552 Microbial Genetics

### Plant Science

472 Plant Improvement

### Zoology

471 Evolution  
476 Human Genetics  
576 Ecological Genetics  
579 Advanced Genetics Seminar

## Geography and Marine Affairs (GMA)

Chairperson: Professor Juda

**100 The Geography of Human Ecosystems (I and II, 3)** The evolution of human environments from the Stone Age to the contemporary megalopolis and the emergent world city in terms of man-earth-space-resource relationships. (Lec. 3) West (S)

**102 Geography of Social Issues (I and II, 3)** Geographic perspective of socioeconomic processes in the city. Emphasis on spatial patterns of social mobility, ethnic diversity, class interaction, and problems of adaptation to the urban-industrial environment. Simulation games. (Lec. 2, Rec. 1) Krausse (S)

**103 Economic Geography (I and II, 3)** Surveys the geographic backgrounds of economic activities. Populations and the resources of agriculture, industry, and commerce in terms of their world and regional distribution. (Lec. 2, Rec. 1) Marti

**131 Political Geography (I and II, 3)** Pattern of political units throughout the world, special emphasis on boundaries, newly independent nations, and other aspects of political control over territory. (Lec. 3) Alexander (S)

**210 Human Use and Control of the Marine Environment (I, 3)** Introduction to man's activities occurring in the marine environment and adjacent land areas. Discussion of marine geography and natural marine processes necessary to understand the controls on man's activities. (Lec. 3) Juda

**312 The Politics of the Ocean** (II, 3) Survey of decision-making with respect to the marine environment at the international, national, and local levels. Special emphasis on laws and treaties of the United States and the United Nations. (Lec. 3) Pre: 210. Juda or Nixon

**410 Problems in Geography and Marine Affairs** (II, 3) Advanced work in the management of the marine environment, with special emphasis on case studies and student projects. (Lec. 3) Required for seniors majoring in geography and marine affairs. Pre: BOT (ZOO) 262 or permission of instructor. Not for graduate program credit. Alexander

**411 Urban Geography** (I, 3) Growth and spatial organization of urban places at macro- and micro-regional scales of investigation in cross-cultural contexts, evolution of internal sociocultural patterns, the role of urbanization in modernization processes. (Lec. 3) Pre: one 100-level geography course or permission of department. Krausse

✓ **413 Peoples of the Sea**  
See Anthropology 413.

**421 Introductory Cartography** (I and II, 3) Principles and methods of map design and construction for geographic analysis. Emphasis on compilation, generalization, scaling, and symbolizing quantitative and qualitative data. (Lec. 1, Lab. 2) Krausse

**422 Advanced Cartography** (II, 3) Advanced map construction, preparation of graphs and diagrams, and a final individual project. Applications of aerial photographs and other forms of imagery. Terrain representation models. (Lec. 2, Lab. 1) Pre: 421 or permission of department. In alternate years, next offered 1984-85. Krausse

**432 Seminar in Political Geography** (II, 3) Special problems of territorial control, including the changing nature of international boundaries, elements of unity and diversity within nations, and concepts of geopolitics. (Lec. 3) Pre: 131 or permission of department. Alexander

**446 Geography of the Polar Regions** (II, 3) Systematic and regional surveys of the physical and biological environments of the Arctic and sub-Arctic. Recent contributions to the geography of the Antarctic. (Lec. 3) Pre: permission of department. Burroughs

**461 Coastal Zone Uses** (II, 3) Activities in the coastal zones of both developed and developing countries, and the impacts of these activities on the environment. Techniques of accommodating conflicting uses. (Lec. 3) Pre: 103, BOT or ZOO 262 or permission of department. West

**471 Island Systems** (II, 3) Man's impact on the use, alteration, and control of island

ecosystems. Emphasis on sociopolitical and technological developments as they effect changes in the oceanic and coastal island environment. (Lec. 3) Pre: 210 or permission of instructor. In alternate years. Krausse

**472 Marine Recreation Management** (I, 3) Analysis of supply and demand of marine-related recreational activities in an urban and exurban context. Analysis of qualitative and quantitative characteristics of user behavior, socio-economic and environmental impact. (Lec. 3) Pre: 103 or permission of instructor. West

**482 Quantitative Methods in Geography and Marine Affairs** (II, 3) Introduction to descriptive and inferential statistics in geography and marine affairs. Emphasis on the spatial application of statistical tests with particular utility to the geographer and marine affairs student. (Lec. 3) Pre: EST 220 (or preferably EST 408 or its equivalent) and one 100-level geography course; permission of department. West

**491, 492 Special Problems in Geography** (I and II, 3 each) Individual guidance in major readings in geography and methods of geographic research. (Lec. 3) Pre: permission of department. Staff

**499 Directed Study** (I and II, 1-3) Individual research and reports on problems of special interest, including honors thesis research. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

**502 Research Methods in Geography and Marine Affairs** (I, 3)

**511 Ocean Uses and Marine Science** (II, 3)

**512 (or PSC 512) Seminar in Marine Science Policy and Public Law** (II, 3)

**516 (or CPL 516) Seminar on the Urban Waterfront** (I, 3)

**520 Seminar in Coastal Margin Management** (II, 3)

**521 Coastal Zone Law** (II, 3)

**523 Fisheries Law and Management** (II, 3)

**562 Admiralty Law** (I, 3)

**563 Transportation Geography** (II, 3)

**564 Port Geography and Policy** (II, 3)

**571 Marine Geography** (I, 3)

**572 Geography of Ocean Regions** (II, 3)

**577 (or PSC 577) International Ocean Law** (I, 3)

**578 International Ocean Organizations** (II, 3)

**579 Marine Jurisdictional Issues** (II, 3)

**586 Environmental Impact Assessment and Analysis** (II, 3)

**591, 592 Directed Study or Research** (I and II, 1-3)

**595 Problems of Modernization in Developing Nations** (II, 3)

## Geology (GEL)

Acting Chairperson: Professor Hermes

**100 Environmental Geology** (I, 3) Geologic processes and how they affect society; geologic hazards, earthquake impact, shoreline development, offshore oil, waste disposal, water resources, nuclear power plant siting; local issues emphasized. (Lec. 3) Cain or Fisher (N)

**101 Geological Field Trips** (I, 1) Field trips to coastal, glacial, and rock exposure. The relation of structures and materials to the history of the earth, mineral resources, and our environment. (Lab. 2) In alternate years, next offered 1984-85. Frohlich

**103 Physical Geology** (I, 3) Physical processes on and within the earth; its composition; development and modification of surficial features and their relationships to internal processes; resource and environmental aspects. (Lec. 3) Not open to students who have passed 105. Pre: concurrent registration in 106. Cain (N)

**104 Historical Geology** (II, 3) Development of continents and ocean basins, method of preservation of fossils, their classification, and introduction to study of fossil plants and animals. (Lec. 2, Lab. 2) Pre: 103 or 105, 106, or permission of instructor. Tynan (N)

**105 Geological Earth Science** (I and II, 3) Introductory study for non-geology majors. Volcanism, earthquakes, mountain building, ice ages, history of the earth, evolution of life. Current topics such as continental drift, seafloor-spreading, environmental geology, and lunar geology. (Lec. 3) Not open to students who have passed GEL 103 or 104. 104 is not prerequisite to 105. Staff (N)

**106 Introductory Geology Laboratory** (I, and II, 1) Introduction to minerals and rocks, their physical properties and mode of origin; geologic and topographic map interpretation. (Lab. 2) Pre: prior or concurrent registration in 103 or 105. Staff (N)

**301 Geology of Mineral Resources** (I, 3) Origin, distribution, and importance of various mineral resources; energy sources, metals, building and industrial materials, water. Strategic minerals, their world distribution and part played in world affairs. (Lec. 3) Pre: 103 or 105 and 106 or permission of instructor. Cain

**303 Environmental Remote Sensing** (II, 3) Introduction to interdisciplinary aspects of environmental remote sensing, including image and non-image sensing applied to geographic mapping, land-use, forestry, geology, engineering, urban-industrial patterns, wildlife management, ecology.



(Lec. 2, Lab. 2) Pre: 100, or 103, or 105 or NRS 100 or junior standing or permission of instructor. Fisher

**320 Hand Sample Mineralogy and Petrology (I, 4)** Crystallography and physical properties of minerals related to crystal structure. Composition, classification, genesis, and interpretation of rocks as related to geological occurrence. Emphasis on hand sample identification. (Lec. 2, Lab. 4) Pre: 103, or 105 and 106, and CHM 101 or 103 (or concurrent registration). Hermes and Cain

**321 Optical Petrography and Petrogenesis (II, 4)** Continuation of 320 emphasizing mineralogy and petrography. Petrogenesis and associations of igneous, sedimentary and metamorphic assemblages. (Lec. 2, Lab. 4) Pre: 320, PHY 112 or 214, CHM 112, may be taken concurrently. Hermes and Cain

**370 Structural Geology (II, 4)** Stress and strain relationships as they pertain to rocks. Manifestations of these phenomena in geologic structures and criteria for recognizing them. (Lec. 3, Lab. 2) Pre: 103 or 104, or 105 and 106, PHY 213 and 285 or 111, or permission of instructor. Murray

**401 Ore Deposits (II, 3)** Origins of metallic ore deposits; factors localizing deposits; mining methods; uses of metals; environmental effects; discussion of specific metals and mining districts. (Lec. 2, Rec. 1) Pre: 301 or 320 or equivalent or permission of instructor. Offered in spring of odd calendar years. Next offered spring 1985. Cain

**410 Geomorphology (I, 4)** Classification of landforms, their development, distribution and associated geologic processes. Cycles of development of coastal, glacial and fluvial landforms. Laboratory: landform analysis of topographic maps, aerial photographs, and field studies. (Lec. 3, Lab. 2) Pre: 103 and 104, or 105 and 106, or permission of instructor. Fisher

**422 Intermediate Mineralogy—Petrology (I, 3)** Continuation of crystallography, petrography, mineral/rock groups and petrologic techniques. Emphasis on mineral/rock suites. (Lec. 2, Lab. 2) Pre: 321. Hermes

**440 Introduction to Paleontology (I, 4)** History, methods, nature and problems. Systematic survey of animal organisms found as fossils with particular emphasis on their morphology, taxonomy and geologic distribution. (Lec. 3, Lab. 2) Pre: 104 or 105 and 106, ZOO 111 or BIO 102, or permission of instructor. Tynan

**450 Introduction to Sedimentation and Stratigraphy (I, 4)** Principles underlying formation, composition, sequence, and correlation of sedimentary rocks. Methods, procedures, and techniques to study sedimentary processes, depositional envi-

ronments, stratigraphic relationships, and stratigraphic correlation. (Lec. 3, Lab. 2) Pre: 321 or permission of instructor. Boothroyd

**465 Introduction to Geophysics (I, 3)** Introduction to physical properties of the earth and application of geophysical exploration techniques. Seismic, gravity, magnetic and electrical field techniques; basic methods of interpretation. (Lec. 2, Lab. 2) Pre: 103 or 105 and 106, PHY 112 or 214, MTH 142, or permission of instructor. Frohlich

**475 Geology of Petroleum (II, 3)** Introduction to the geology of petroleum; the origin, migration and accumulation of hydrocarbons. Reservoir characteristics, traps, surface, and subsurface exploration methods, drilling methods, and products. (Lec. 2, Rec. 2) Pre: 370 and 450. In alternate years. Tynan

**480 Summer Field Camp (SS, 4-8)** Geologic field mapping and principles. Course not offered through URI; prior approval of selected camp required by the Geology Department. Recommended between junior and senior years. Not for graduate credit. Pre: 321, 370, 410, 440, 450 recommended. Staff

**485 (or CVE 485) Engineering Geophysics (II, 3)** Field and lab methods of determining physical rock constants such as density, porosity, permeability, electrical conductivity, and seismic velocity, with applications in engineering geology and geotechnical engineering. (Lec. 2, Lab. 2) Pre: 103, 106, MTH 142, PHY 111, and junior standing or permission of instructor. Frohlich

**491 Special Topics (I and II, 1-3)** Advanced work for undergraduates under the supervision of a member of the faculty, arranged to suit the individual requirements of the student. Not for graduate program credit. Pre: permission of instructor. Staff

**499 Senior Thesis (I and II, 3)** Independent research. Student selects an area of study and works in close conjunction with a faculty member of his or her choice. (Lab. 6) Pre: senior standing and permission of instructor. Not for graduate degree program credit. Staff

**510 Coastal Geomorphology (II, 3)**  
**512 Geologic Terrain Remote Sensing (II, 3)**  
**515 Glacial Geology (II, 3)**  
**525 Advanced Mineralogy and Petrography (I, 3)**

**527 Analytical Geochemistry (II, 3)**  
**530 Igneous Petrology (II, 3)**  
**531 Metamorphic Petrology (II, 3)**  
**541 Animal Micropaleontology (I, 3)**  
**542 Plant Micropaleontology (II, 3)**  
**550 Sedimentary Processes (I, 3)**  
**553 Basin Analysis (II, 3)**  
**555 Biostratigraphy (I, 3)**

**565 Advanced Interpretation in Applied Geophysics (II, 3)**  
**566 Seismology and Plate Tectonics (II, 3)**  
**570 Structural Analysis (I, 3)**  
**571 Structural Petrology (II, 3)**  
**577 Coastal Geologic Hazards (II, 3)**  
**580 New England Geology (I, 3)**  
**585 Geohydrology (II, 3)**  
**590 Special Problems (I and II, 1-3)**

## German (GER)

Section Head: Professor Dornberg

**101 Beginning German I (I and II, 3)** Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior German. Staff (F)

**102 Beginning German II (I and II, 3)** Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)

**103 Intermediate German I (I and II, 3)** Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. Staff (F)

**104 Intermediate German II (I and II, 3)** Continuation of 103. Pre: 103 or equivalent. Staff (F)

**105, 106 Basic Conversation I and II (I and II, 1 each)** 105: Practice in conversational skills. Pre: 103 or concurrent registration in 103. 106: Continued practice in conversational skills. (Lec. 1) Pre: 104 or concurrent registration in 104. Staff

**111, 112 Elementary Conversational German (SS, 4)** Intensive study of fundamentals of German with special emphasis on listening and speaking skills. Not for major in German. (Lec. 4) Staff

**113, 114 Intermediate Conversational German (SS, 4)** Intensive practice in listening and speaking. Review of grammatical structure. (Lec. 4) Pre: 112 or equivalent. Staff

**121 Conversational German for Business and Travel (SS, 4)** Intensive study of the fundamentals of German with special emphasis on the listening and speaking skills pertinent to international business. Not for major in German. (Lec. 4) Staff

**205, 206 Conversation and Composition (I and II, 3 each)** Development of facility in spoken and written German using contemporary writings and topics; special emphasis on general classroom discussion. (Lec. 3) Pre: 104 or equivalent. Staff

**215, 216 Advanced Conversational German (SS, 4)** Intensive practice in speaking and

listening, with some attention to writing skills. (Lec. 4) Pre: 114 or equivalent. Staff

### 221 Introduction to Business German

(SS, 1) Conversational practice in German with emphasis on the acquisition of vocabulary pertinent to international business. Pre: 112 or equivalent. Grandin

**305 Advanced Conversation (I, 3)** Intensive practice in spoken German based upon matters of current interest in the German-speaking countries. (Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1985-86. Crossgrove

**306 Advanced Composition (II, 3)** Training in various forms of writing by means of frequent compositions and critiques. (Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1984-85. Crossgrove

**315, 316 Language Study Abroad (I and II, 3-5 each)** Credit for advanced language study in a German-speaking country. Pre: 206 or equivalent and permission of department. Staff

**325 Introduction to Modern German Literature: Genres (II, 3)** Traditional and recent forms of narrative, drama, and lyric as illustrated by leading writers from 1885 to the present. (Lec. 3) Pre: 104 or equivalent. In alternate years, next offered 1985-86. Staff (A)

**326 Introduction to Modern German Literature: Movements (II, 3)** Literary and cultural developments as reflected by leading writers from 1885 to the present. (Lec. 3) Pre: 104 or equivalent. In alternate years, next offered 1984-85. Staff (A)

**391 Masterpieces of German Literature (I, 3)** Literary works from the Middle Ages through 1800 in English translation. (Lec. 3) May not be used toward a major in German. In alternate years, next offered 1984-85. Staff (A) (F)

**392 Masterpieces of German Literature (II, 3)** Literary works from 1800 to the present in English translation. (Lec. 3) May not be used toward a major in German. Staff (A) (F)

**393 Topics in German Literature (I or II, 3)** Selected topics in English translation. (Lec. 3) May not be used toward a major in German. Staff (F)

**421 Business German (I and II, 3)** Study of the concepts and terminology of the German language common to the realm of international business. Intended for advanced students of business and German. (Lec. 3) Pre: junior standing; 305, 306, or concurrent registration in 305 or 306. Grandin

**441, 442 German Literature of the Eighteenth Century (I and II, 3 each)** Principal literary movements of the century as

illustrated by leading writers of the time. (Lec. 3) Pre: 206 or equivalent. 441 is not a prerequisite for 442. In alternate years, next offered 1984-85. Grandin

**451, 452 German Literature of the Nineteenth Century (I and II, 3 each)** Principal literary movements of the century as illustrated by leading writers of the time. (Lec. 3) Pre: 206 or equivalent. 451 is not a prerequisite for 452. In alternate years, next offered 1985-86. Dornberg

**485, 486 Special Studies (I and II, 3 each)** Special topics in German literature not emphasized in other courses. (Lec. 3) Pre: one semester of German at the 300 level or permission of department. In alternate years, next offered 1984-85. Staff

**497, 498 Directed Study (I and II, 1-3)** Designed particularly for the advanced student. Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and permission of department. Staff

**586 Seminar in German Studies (I, II and SS, 3)**

**598 Directed Studies (I, II and SS, 1-3)**

## Gerontology

Director: Professor Spence

### Human Development, Counseling and Family Studies

220 Gerontology: Theory and Application  
221 Work with the Aging  
420 Human Development During Adulthood  
421 Death, Dying, and Bereavement  
422 Aging: Case Coordination  
431 Family and the Elderly  
520 Developmental Issues in Later Life  
527 Health Care Policy and the Elderly  
529 Practicum Seminar in Gerontology  
555 Gerontological Counseling

### Consumer Studies

342 Housing for the Elderly

### Dental Hygiene

462 Oral Care of the Aging and/or Chronically Ill

### Education

410, 411 Seminar and Supervised Field Practicum in Education of the Aging

### Food Science and Technology, Nutrition and Dietetics

307 Nutrition and Aging

### Physical Education

563 Fitness Programs for the Middle-Aged and Elderly  
564 Physiology of Aging

### Recreation

416 Physical Aging and Leisure Skill

## Sociology

438 Aging in Society

## Greek (GRK)

Chairperson: Associate Professor Cashdollar (Department of Languages)

**101 Beginning Greek I (I and II, 3)** Grammar and syntax of ancient Attic Greek combined with reading practice. In the second semester a text of standard Attic prose is read. (Lec. 3) Pre: no prior Greek. Cashdollar (F)

**102 Beginning Greek II (I and II, 3)** Continuation of 101. Pre: 101 or equivalent. Cashdollar (F)

**109, 110 Introduction to Ancient Greek Culture (I, II, 3)** Aspects of Greek culture — literature, religion, myth, philosophy, art, private life, archaeology, and etymology — studied through readings in English translation, color slides, and lectures. (Lec. 3) Cashdollar (F)

**301, 302 Directed Readings in Greek (I, II, 3-12)** Study of Ancient Greek writers selected in accordance with the needs and background of the student. May be repeated with different topic for additional credit. (Lec. 3-12) Pre: 102 or equivalent and permission of the instructor. Staff (F)

**497, 498 Directed Study (I and II, 3)** Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

## Health (HLT)

Chairperson: Associate Professor Polidoro (Physical Education, Health and Recreation)

**123 Foundations of Health (I and II, 3)** Development of attitudes and practices that lead to more healthful living. Personal and community health problems are studied. (Lec. 3) Staff (S)

**172 First Aid (I or II, 1)** Basic instruction and practice in accident prevention and first aid procedure. Students successfully meeting requirements will receive a Standard First Aid Certificate. (Lec. 1) Staff

**272 Advanced First Aid (I and II, 2)** Instruction and practice in advanced first aid and emergency care techniques and skills. Fulfills requirements for Red Cross Advanced First Aid Certificate. (Lec. 1, Lab. 2) Vanner

**356 Methods and Materials in Health Education (I and II, 3)** Curricular materials for school and public health education; evaluation of techniques and current methodology

for use in elementary and secondary schools. (Lec. 3) DelSanto

**357 Principles of Community Health (II, 3)** Principles of community health with emphasis on problems of health departments, public and private agencies, and schools in the community health education program. (Lec. 3) Pre: 123, 367 or permission of department. DelSanto

**358 Current Problems of Safety and First Aid (I, 3)** Major emphasis on content, methods, procedures, and techniques of teaching safety. Reports on the latest developments in teachers' liability and responsibilities for accidents to school children. (Lec. 3) Nedwitek

**359 Field Work in Health (II, 3)** Directed participation in community health education in cooperation with community health organizations. Weekly seminars. (Lab. 6) Pre: 357 or permission of department. DelSanto

**367 (or EDC 367) School Health Program (I, 3)** Organization of the school health program in relation to the community health program. Emphasis on health instruction, health services, and healthful school environment. (Lec. 3) DelSanto

**372 Instructor's First Aid (I or II, 1)** For students and teachers who have completed the advanced course within two years, and desire to certify pupils in Junior, Standard and Advanced First Aid courses. (Lec. 1) Vanner

**377 Current Health Problems (I and II, 3)** Health problems of current importance on an individual, community, national, and international basis. Content application. Solutions to health problems. Includes the school, community, and public health approaches to these problems. Pre: 367 or permission of department. DelSanto and O'Donnell.

**380 Organization of Community Health Services (I or II, 3)** An examination of the health services delivery system in the United States with emphasis on the role and function of state and local health agencies. Agency visits required. (Lec. 3) Pre: 357 or permission of instructor. O'Donnell

**391 Directed Study**  
See Physical Education 391.

**457 Health and Safety Issues of Consumer Products**  
See Consumer Studies 457.

**484 Supervised Field Work**  
See Physical Education 484.

**486 Field Experience Seminar**  
See Physical Education 486.

**560 (or PED 560) Seminar in Health, Physical Education and Recreation (I or II, 3)**

**570 (or PED 570) Major Health Problems and Curriculum Planning in Health Education (I or II, 3)**

**591 (or PED 591) Special Problems (I or II, 3)**

**595 (or PED 595) Independent Study (I or II, 3)**

## Hebrew (HBW)

Chairperson: Associate Professor Cashdollar  
(Department of Languages)

**101 Beginning Hebrew I (I or II, 3)** Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Hebrew. Jagolinzer (F)

**102 Beginning Hebrew II (I or II, 3)**  
Continuation of 101. Pre: 101 or equivalent. Jagolinzer (F)

## History (HIS)

Chairperson: Professor Gutchen

**103 Special Topics in Western Civilization (I and II, 1-3)** Topical approach to, rather than a survey of, Western civilization. Topics vary from semester to semester. (Lec. 3) Staff (L)

**105 Freshman Seminar in History (I or II, 3)** Re-creating the past by the use of original historical source materials in topics and areas to be selected. Limited to 15 freshmen. Pre: permission of department. Staff (L)

**111 History of Ancient Greece and Rome (I, 3)** From the Greek and Latin settlements to the Germanic invasions with emphasis on political, social, economic, and aesthetic developments. Includes rise of the Christian church. (Lec. 3) Daniel (F) (L)

**112 History of Medieval Europe (II, 3)** Primarily western Europe. Follows 111. Medieval church, feudalism, revival of town life, commerce, industry and money economy, rise of national states and development in the arts. (Lec. 3) Daniel (F) (L)

**113 History of Western Civilization from the Late Middle Ages to 1789 (I and II, 3)** Introductory course treating Western civilization in its broadest sense from the late Middle Ages to the French Revolution and the beginnings of industrialization. (Lec. 3) Staff (F) (L)

**114 History of Western Civilization since 1789 (I and II, 3)** Continuation of 113. Western civilization of the present time. (Lec. 3) Staff (F) (L)

**115 The History of Science to 1800 (I, 3)** A survey of the developments of science from Ancient Greece through the Scientific Revolution of the seventeenth and eighteenth centuries. (Lec. 3) Briggs (L)

**116 The History of Science since 1800 (II, 3)** A survey of the developments of science in society over the last two centuries. (Lec. 3) Briggs (L)

**118 Women in European History (II, 3)** Attitudes toward women, their role in society, women's work, and the feminist movement. Emphasis on nineteenth and twentieth centuries with background material from earlier periods. (Lec. 3) Staff (L)

**122 History of England since 1500 (I or II, 3)** Emphasis on constitutional conflicts and developments, commerce, agricultural and industrial revolutions, artistic, intellectual, and social developments. Not open to students who have passed 123. (Lec. 3) Gutchen (L)

**123 Modern British Civilization (I or II, 3)** An introduction to British culture in the nineteenth and twentieth centuries. Surveys of the impact of the industrial revolution, political developments, and social change; also Britain's role in the world, Ireland, and the world wars. Not open to students who have passed 122. Gutchen (F)

**125 Introduction to German History (I or II, 3)** A topical introduction to traditions and movements which have shaped German history in the modern era. (Lec. 3) Honhart (F)(L)

**132 Introduction to Russian and Soviet History (I or II, 3)** Selected topics in the development of Russian civilization since the ninth century. (Lec. 3) Thurston (F) (L)

**141 History of the United States to 1877 (I or II, 3)** Colonial and Revolutionary periods, and economic, social, and political development of the United States through the Civil War and Reconstruction. (Lec. 3) Staff (L)

**142 History of the United States since 1877 (I or II, 3)** General social, economic and political development to the present. (Lec. 3) Staff (L)

**143 Special Topics in the History of the United States (I and II, 1-3)** Topical approach to, rather than a survey of, American history. Topics vary from semester to semester. (Lec. 3) Staff (L)

**145 Women in American History (I or II, 3)** American women from the colonial period to the present. Emphasis on institutionalization of the Victorian ideal, women in the labor force, and origins of liberation ideology. (Lec. 3) Strom (L)

**150 Introduction to Afro-American History (I or II, 3)** Survey of Negro American history from African origins to the current racial confrontation. (Lec. 3) Weisbord (L)

**171 East Asian Culture and History** (I or II, 3) Introduction to the culture and history of East Asia. Emphasis on the literary, artistic, and philosophical traditions of East Asia especially as those aspects relate to and influence contemporary developments. (Lec. 3) Kim (F) (L)

**174 Islamic Civilization in Asia, 570 to the Present** (I, 3) Cultural history of the Muslim people of Asia with emphasis on the religion, social organization, architecture, painting, and music of the Arab, Turkic and Persian peoples. (Lec. 3) Roughton (F)

**175 Islamic Civilization in Africa and Spain, 570 to the Present** (II, 3) Cultural history of the Muslim peoples of Africa and Spain with emphasis on religion, social organization, architecture, painting, and music. (Lec. 3) Roughton (F)

**180 Introduction to Latin American Civilization** (I or II, 3) Social, cultural and political history of the Latin American region from the pre-conquest era to the present time. (Lec. 3) Besse (F) (L)

**304 Western Europe in the High Middle Ages** (I, 3) Primarily France and England in the twelfth and thirteenth centuries. Emphasis on the Medieval Gothic-Catholic culture, the rise of towns, and the development of a money economy. (Lec. 3) Daniel (F) (L)

**305 The Renaissance** (II, 3) Europe in transition during the fourteenth through the early sixteenth centuries, the economic, social, and religious backgrounds of the Renaissance. Emphasis on culture and artistic developments. (Lec. 3) Daniel (F) (L)

**306 The Protestant and Catholic Reformation I** (I, 3) Change of European society resulting from Protestant Reformation and Catholic Reaction; rise of secular states and emerging national states; effects of religious crises upon culture and society. (Lec. 3) Daniel (F) (L)

**307 Protestant and Catholic Reformation II** (II, 3) Catholic and Counter Reformation, Northern Renaissance, wars of religion, social and cultural manifestations of the early Baroque. (Lec. 3) Daniel (F) (L)

**308 History of Europe, 1648-1789** (I, 3) Survey of the European states from the Peace of Westphalia to the French Revolution. Emphasis on relationship among social and economic conditions and political development. (Lec. 3) Silvestri

**309 The French Revolution and Napoleon** (I, 3) Examination of the Revolution and Napoleonic eras with emphasis on the connections among economic, social, and political developments. Special attention to problems in interpretation. (Lec. 3) Silvestri (L)

**310 History of Europe, 1815-1914** (I, 3) Major political, economic, and intellectual developments in Europe from the defeat of Napoleon I to the outbreak of World War I, emphasis on the Revolutions of 1848, unification of Italy and Germany, impact of the Industrial Revolution, nationalism and imperialism, background of World War I. (Lec. 3) Silvestri (F) (L)

**311 History of Europe since 1914** (II, 3) Detailed study of developments from 1914 to present: wars, post-war adjustments, communist and fascist ideologies, history of individual states, and social and intellectual trends. (Lec. 3) Silvestri, Honhart (F) (L)

**314 Seventeenth- and Eighteenth-Century European Cultural History** (I, 3) Intellectual and social movements of the Age of Reason and the Age of Enlightenment. (Lec. 3) Briggs (F)

**315 Nineteenth- and Twentieth-Century European Cultural History** (II, 3) Intellectual and cultural movements from Romanticism through Existentialism. (Lec. 3) Honhart and Thurston (F) (L)

**318 Diplomatic History of Europe since 1815** (I, 3) Materials used in writing diplomatic history, review of the major crises with their causes and consequences, and movements for collective security. (Lec. 3) Staff

**321 History of England: 1485-1660** (I, 3) Political, economic, and religious change from the beginning of the Tudor dynasty to the Puritan Revolution and the Commonwealth. (Lec. 3) Gutchen (L)

**322 History of England: 1660-1815** (II, 3) Political, economic, religious, and cultural change from the Stuart restoration to the emergence of Britain as a world power at the end of the Napoleonic wars. (Lec. 3) Gutchen (L)

**323 History of England: 1815-1896** (I, 3) Impact of industrialization and urbanization on political, economic, religious, and cultural forces in the Victorian age. (Lec. 3) Gutchen (L)

**324 History of England since 1896** (II, 3) History of Britain since 1896, with emphasis upon its changing role as a world power, the impact of economic change on politics and society, and the development of the social welfare state. (Lec. 3) Gutchen (L)

**325 History of European Socialism** (I, 3) Historical development of socialism in Europe since beginning of the Industrial Revolution, emphasis on socialist movements and ideologies in Germany, France, Russia, and England. (Lec. 3) Honhart (L)

**326 German History, 1640-1914** (I, 3) The evolution of modern German society from mid-seventeenth century to the First World War. Topics include: absolutism, enlightenment, nationalism, industrialization, demographic trends, and changing patterns in social structure and social conflict. (Lec. 3) Honhart (F)

**327 German History since 1914** (II, 3) The collapse of Germany's social and political order between 1914 and 1945 and the subsequent creation of antagonistic liberal and socialist societies in West and East Germany. Emphasis on national socialism. (Lec. 3) Honhart (F) (L)

**328 The Holocaust** (I or II, 3) Study of Nazi efforts to exterminate Jews and others in Europe. Focuses on Nazi programs and policies; Jewish experiences; and the responses of the outside world. (Lec. 3) Weisbord and Honhart

**330 History of France since 1815** (II, 3) French political and social history from the end of the First Empire to the Fifth Republic. Complexities of class divisions and their repercussions on French political history. (Lec. 3) Silvestri (F)

**332 History of Russia to 1917** (I, 3) Russian origins in medieval Kiev and rise of autocracy in Muscovy. Imperial Russia's development in eighteenth and nineteenth centuries. Emphasis on social and cultural change. (Lec. 3) Thurston (F) (L)

**333 History of the Soviet Union** (II, 3) Russian history from the revolutions of 1917 to the present. Emphasis on the reconstruction of Russian institutional life by the Bolsheviks, and political, economic, intellectual, and ideological developments. (Lec. 3) Thurston (F) (L)

**335 American Colonial History to 1763** (I, 3) American history from the founding of the colonies to the end of the French and Indian War, including developments within the colonies as well as their relationship with England. (Lec. 3) Pre: 141 or equivalent. Cohen

**336 The American Revolution and Confederation, 1763-1789** (I, 3) Social, political, and economic aspects of the Revolution and Confederation periods. (Lec. 3) Pre: 141 or permission of instructor. Cohen

**337 The United States during the Early National Period, 1789-1850** (II, 3) American history from the Constitution through the Federalist, Jeffersonian, and Whig periods with emphasis upon political developments and social economic aspects of the era. (Lec. 3) Pre: 141 or permission of instructor. Murphy

**339 Emergence of Industrial America, 1877-1917** (I, 3) Growth and consolidation of business, urbanization, and the Populist and



Progressive movements. America's emergence as a world power. (Lec. 3) Pre: 142 or permission of instructor. Klein and Findlay

**340 United States History from 1917 to 1945** (I or II, 3) Social, political, and economic developments between the World Wars. Emphasis on domestic affairs, special attention to the involvement of the United States in World War II. (Lec. 3) Klein and Findlay (L)

**341 United States History since 1945** (I or II, 3) Social, political, and economic developments since the end of World War II. Equal emphasis upon the domestic sphere and the role of the United States in the world. (Lec. 3) Klein and Findlay (L)

**342 Social and Intellectual History of the United States to 1865** (I, 3) Survey of social and intellectual development to the end of the Civil War, including literary, artistic, and scientific trends, reform movements and growth of the democratic ideal. (Lec. 3) Murphy and Strom (L)

**343 Social and Intellectual History of the United States, 1865 to the Present** (II, 3) Social and intellectual development after the Civil War, including literary, artistic, scientific trends. Particular attention to interaction between concepts and institutions during periods of social reform. (Lec. 3) Pre: 142 or permission of instructor. Klein

**344 History of the North American Indian** (I or II, 3) Native North Americans from pre-Columbian times to present. Emphasis on ideological conflict between Indians and whites. (Lec. 3) Costigliola (F)

**346 Immigration to Ethnicity in Modern America** (I, 3) Nature of population movements to U.S. in nineteenth and twentieth centuries, formation of ethnic communities and their internal dynamics, role of ethnic groups in American social, cultural, and political history. (Lec. 3) Findlay (L)

**347 American Women in the Twentieth Century** (I, 3) Emphasis on the nature of women's work, changes in sexual behavior, feminist movement, and images of women in popular culture. (Lec. 3) Pre: 145 or permission of instructor. Strom

**350 Constitutional History of the United States** (II, 3) The origins, framing and development of the Constitution of the United States with particular attention to the social and economic influences that have shaped our form of government and our attitudes toward it. (Lec. 3) Pre: 141 and 142. Staff

**353 United States Diplomatic History to 1914** (I or II, 3) Analysis of the people, ideas, and institutions which shaped the rise of the U.S. from thirteen colonies to the most

powerful nation in the world. (Lec. 3) Costigliola (L)

**354 United States Diplomacy in the Twentieth Century** (I or II, 3) Analysis of people, ideas, and institutions which have shaped American relations with the rest of the world from World War I to the present. (Lec. 3) Costigliola (L)

**355 The Transnational Corporation** (I or II, 3) History of the transnational or multinational corporation from its rise in the late nineteenth century to its preeminence today. The course considers economic, political and social factors. Costigliola

**357 History of Religion in the United States** (I, 3) Background, emergence of evangelical protestant synthesis, disintegration of this synthesis and development of pluralistic religious community in modern America. (Lec. 3) Findlay

**358 Recent America in Film** (II, 3) An investigation of American culture and history since 1930 using films as the major resource for study, with emphasis on the Great Depression, WWII, sexual interaction, and race relations. (Lec. 1, Lab. 4) Strom

**362 History of Rhode Island** (II, 3) History of Rhode Island from the first English settlement to the present day. Social, political, and economic aspects of internal development and the relation of the state to the region and the nation. (Lec. 3) Pre: 141 and 142. Staff

**363 American Urban History** (I, 3) Origins, development and role of cities in America from colonial times to the present. Emphasis on tensions between social change and social control generated by urban growth. (Lec. 3) Klein

**365 Civil War and Reconstruction** (I or II, 3) American history during the period 1850-1877, giving equal emphasis to the background of the Civil War, the war itself, and the social, political, and economic aspects of Reconstruction. (Lec. 3) Klein, Strom

**372 Science in the Modern World** (I or II, 3) A study of the development of specific scientific innovations and their effects on the scientific community, scientific disciplines, technology, and society in general since the Renaissance. (Lec. 3) Briggs

**373 (or ZOO 373) History of Biology** (I or II, 3) Development of basic ideas and paradigms of biology from the Greek world to the present. Emphasis on the period of the last three centuries. (Lec. 3) Briggs

**374 History of Modern China** (II, 3) Political, social, economic, and cultural development of China since 1800 with the emphasis on the development of Chinese nationalism

and on the rise, theory, and practice of Chinese communism. (Lec. 3) Kim (F)

**375 History of Modern Japan** (I, 3) Background and significance of the Meiji restoration (1868) and modernization; the development of Japanese militarism, the fall of the Japanese Empire and the emergence of the "New Japan." (Lec. 3) Kim (F)

**376 History of Modern Korea** (II, 3) Eighteenth century Yi government and society; colonial totalitarianism under Japanese rule; the fall of the Japanese Empire, division, and chaos; the Korean conflict and aftermath. (Lec. 3) Kim (F)

**377 Southwest Asia and North Africa since 1683** (II, 3) Southwest Asia and North Africa from the second siege of Vienna. Transformation of Ottoman and Iranian societies under the influence of Western ideas and institutions. Development of Arab, Turkish, and Iranian nationalisms. (Lec. 3) Roughton

**378 Arab-Israeli Conflict** (I or II, 3) An examination of the roots of Arab nationalism and modern political Zionism; conflict between the World Wars; the creation of the state of Israel and the causes of continuing conflict since. (Lec. 3) Weisbord (F)

**379 Imperialism and its Impact upon Colonized Peoples** (I, 3) Historical analysis of colonialism and imperialism, the struggle for independence, and the problems confronting newly independent states, with emphasis on the Third World. (Lec. 3) Roughton

**381 History of Colonial Latin America** (I, 3) The interaction of American-Indian civilizations with European and African elements in the Spanish and Portuguese empires of the New World, concluding with the wars for independence. (Lec. 3) Besse (F) (L)

**382 History of Modern Latin America** (II, 3) Historical analysis of the political, cultural, and social-economic dimensions of tradition, reform, and revolution in Latin America since 1810. (Lec. 3) Besse (F) (L)

**383 History of Modern Mexico** (I or II, 3) Social, economic, and political development of Mexico from 1810 to the present, emphasizing the Revolution of 1910, its background and aftermath. (Lec. 3) Besse (F) (L)

**384 The Caribbean: New World/Third World** (I or II, 3) Historical and contemporary development of the Caribbean world, emphasizing efforts by the regions' peoples to achieve political, economic, and cultural independence from external domination. (Lec. 3) Besse (F) (L)

**388 History of Sub-Saharan Africa** (I, 3) Ancient and medieval Africa, and the impact of Islam; the "Glorious Age" of the Sudanic empires; the slave trade and the age of exploration; the period of European partition

and the rise of African nationalism. (Lec. 3)  
Pre: junior standing. Weisbord (F)

**391 Directed Study or Research** (I and II, 3)  
Special work arranged to meet the needs of individual students who desire advanced work. (Lec. or Lab.) Pre: permission of department.

**393 Topics in History** (I and II, 1-3) Subject, course content, and years offered will vary according to expertise and availability of instructors. With departmental permission can be taken more than once. Staff

**395 Seminar in History** (I or II, 3) Introduction to historical research and writing. Topics vary. Required for history concentration. Pre: permission of department. Staff

**397 The Historical Landscape of Britain** (SS, 3) Taught in England. Examines the impact of political, military, religious, economic and social change in the past six or seven centuries on the landscape of village and field and town and country. Usually taught in conjunction with ENG 397. (Lecture and field trips) Gutchen (F)

**398 History through Science Fiction** (II, 3) Ideas about history in popular culture as seen in the literary genre of science fiction. (Lec. 3) Briggs, Klein

**451 Historical Society and Museum Administration** (II, 3) Survey of historical societies, museums, and preservation agencies; the collection, care and interpretation of historical artifacts and documents; problems facing historical agencies. Student work programs and museum visits. (Lec. 3) Klyberg

**491 Conference on the Social Studies** (SS, 3) Intensive study of selected aspects of the social sciences and problems or issues in social studies, viewed in historical perspective. Topic varies. Staff

**500 Colloquium in Selected Topics in History** (I or II, 3)

**502, 503 Special Readings in European History** (I and II, 3)

**505 Seminar in Selected Topics in History** (I or II, 3)

**536, 537 Special Readings in American History** (I and II, 3 each)

**544 (or LRS 544) Colloquium in Labor History** (I or II, 3)

**588, 589 Special Readings in Third World History** (I and II, 3 each)

**591 Directed Study or Research** (I and II, 3)

## Home Economics (HEC)

**400 Home Economics Seminar** (II, 1) Didactic and experimental learning in the areas of home economics. Historic perspective, current issues, and futuristic trends in home

economics. (Lec. 1) Pre: HSS 320 and field experience. Intended for general home economics majors. Not for graduate credit. Staff

## Home Economics Education (HED)

Chairperson: Professor Long

**334 Teaching-Learning Strategies** (I, 3) Instructional strategies for home economics areas. Selection of resource materials and techniques based on objectives, needs, and characteristics of learners and sound educational principles. (On-site observations and teaching experiences.) Pre: EDC 101 and 12 credits in home economics, or permission of instructor. Staff

**337 Teaching Effectiveness** (II, 4) Development of curriculum materials specific to individualized instruction; focus on communication skills in an educational setting; implementation of advanced methods and techniques in a microteaching and school setting. (Lec. 2, Lab. 4) Pre: 334. P. Kelly

**478, 479 Problems in Home Economics Education** (I and II, 1-3 each) Advanced work in home economics education. Seminars or supervised individual projects. (Lec. or Lab.) Pre: permission of department. Staff

**482 Field Experience** (I and II, 1-3) Supervised teaching experience in home economics in either a school or non-school setting. (Not synonymous with experience gained in 483 or EDC 484.) Not for graduate degree credit. Pre: 337 (or concurrent registration), 12 credits in a selected area or permission of department. S/U credit. Staff

**483 Teaching Alternatives** (I, 8) Directed field experience in home-economics-related areas for students who do not wish teacher certification. Not available to teacher certification undergraduate students or for graduate degree program credit. (Field experience 240 hours) Pre: 337 (or concurrent registration), 12 credits in a selected area. Permission of department. S/U credit. Staff

**490 Teaching Home Economics: Grades 1 through 6** (I and II, 2) Development of home economics curriculum for the elementary school with emphasis on integration of home economics objectives with existing school curriculum. Guided field experience. May be taken concurrently with EDC 484, 485. (Lec. 4) Pre: 334, HCF 200, EDC 312 or permission of department. P. Kelly

**491 Teaching Home Economics: Adults** (II, 3) Planning and preparing curriculum materials for adult education classes in home economics, based on adult needs and interests. Participation in actual teaching. One-

half semester course which may be taken concurrently with EDC 484. Pre: 334 or permission of department. P. Kelly

**495 Teaching Occupational Home Economics** (I or II, 3) Concepts and components of career and vocational education with implications for change in home economics education. Exploration of work experience possibilities and review of educational materials. Staff

**506 Instructional Communications** (I or II, 3)

**507 Curriculum Development** (I or II, 3)

**508 Supervision of Student Teachers** (I or II, 3)

**509 Seminar in Home Economics Education** (I or II, 3)

**531 (or FSN 531) Teaching of Nutrition** (I or II, 3)

**532 (or CNS 532) Consumer Education** (II, 3)

**586, 587 Problems in Home Economics Education** (I and II, 3 each)

## Honors Program (HPR)

Director: Professor Kunz

**101 Analytical Thinking in the Humanities** (I and II, 3) Identification and comparison of analytical and critical methods employed by humanistic disciplines. Practice in their application. Open only to freshman honors students. Barker and Trivelli (A)

**102 Analytical Thinking in the Social Sciences** (I and II, 3) Identification and comparison of the analytical and critical methods employed in the social sciences. Practice in their application. Open only to freshman honors students. Wood (S)

**103 Analytical Thinking in the Natural Sciences** (II, 3) General themes in science as the basis for studying the "scientific method" and methods of analytical thinking common to problem solving in the sciences. (Lec. 3) Open only to freshman honors students. Rosen (N)

**104 Analytical Thinking in the Letters** (I and II, 3) Identification and comparison of analytical and critical methods employed by historians and philosophers. Practice in their application. Open only to freshman honors students. Staff (L)

Freshman honors sections of courses that have been approved for General Education may be taken for General Education credit.

**111 Freshman Honors Course in Fine Arts** (I and II, 1-4)

**112 Freshman Honors Course in Language or Literature** (I and II, 1-4) Fall 1984: Introduction to the Study of Language. Arakelian (S)

**113 Freshman Honors Course in Philosophy** (I and II, 1-4)

**114 Freshman Honors Course in History (I and II, 1-4)**

**115 Freshman Honors Course in Political Science or Economics (I and II, 1-4)**

**116 Freshman Honors Course in Sociology or Anthropology (I and II, 1-4)**

**117 Freshman Honors Course in Psychology (I and II, 1-4)** Fall 1984: Introduction to Psychology. Silverstein (S)

**118 Freshman Honors Course in Speech Communication or Journalism (I and II, 1-4)**

**119 Freshman Honors Course in Interdisciplinary Studies (I and II, 1-4)** Spring 1985: Honors Writing. Martin (CW)

**121 Freshman Honors Course in Mathematics (I and II, 1-4)**

**122 Freshman Honors Course in Physical Sciences (I and II, 1-4)**

**123 Freshman Honors Course in Biological Sciences (I and II, 1-4)** Fall 1984: Honors Zoology Laboratory. Heppner (N)

**201, 202 Honors Colloquium (I and II, 3 each)** 1984-85: Real and Artificial Intelligence. Pickart and Kowalski 3 (N), 3 (S), 3 (L)

**301, 302 Honors Tutorial (I and II, 3 each)**

**311 Honors Tutorial in Fine Arts (I and II, 1-3)**

**312 Honors Tutorial in Language or Literature (I and II, 1-3)** Fall 1984: Science and the Literary Imagination. Steeves. Spring 1985: Modern Styles and Sensibilities in Fiction: Wharton, Woolf, and Walker. Cuddy. Spring 1985: Psychological and Social Realities in Brazilian Fiction. McNabb

**313 Honors Tutorial in Philosophy (I and II, 1-3)**

**314 Honors Tutorial in History (I and II, 1-3)** Fall 1984: American Politics and Culture in the 1960's. Costigliola

**315 Honors Tutorial in Political Science or Economics (I and II, 1-3)** Fall 1984: Politics and Vulnerability. Killilea

**316 Honors Tutorial in Sociology or Anthropology (I and II, 1-3)** Fall 1984: Social Change. Spaulding

**317 Honors Tutorial in Psychology (I and II, 1-3)** Fall 1984: Mental Health — Theory, Research and Policy. Stevenson

**318 Honors Tutorial in Speech Communication or Journalism (I and II, 1-3)** Fall 1984: The Information Age. Doody

**319 Honors Tutorial in Interdisciplinary Studies (I and II, 1-3)**

**321 Honors Tutorial in Mathematics (I and II, 1-3)**

**322 Honors Tutorial in Physical Sciences (I and II, 1-3)**

**323 Honors Tutorial in Biological Sciences (I and II, 1-3)**

**331, 332 Honors Tutorial in Human Science and Services (I and II, 1-3 each)** Spring 1985: Basic Principles and Procedures in Speech-Language Pathology. Grubman

**341, 342 Honors Tutorial in Business (I and II, 1-3 each)**

**351, 352 Honors Tutorial in Nursing (I and II, 1-3 each)** Fall 1984: Computers in Nursing and Health Care. Palm

**361, 362 Honors Tutorial in Engineering (I and II, 1-3 each)** Fall 1984 and Spring 1985: Topics in Chemical Engineering. Barnett

**371, 372 Honors Tutorial in Resource Development (I and II, 1-3 each)**

**381, 382 Honors Tutorial in Pharmacy (I and II, 1-3 each)** Fall 1984: The Pharmacist's Role in Community Health Planning. Youngken

**401, 402 Honors Project (I and II, 3 each)**

**411, 412 Honors Seminar (I and II, 3 each)**

## Human Development, Counseling, and Family Studies (HCF)

Chairperson: Associate Professor Schaffran

**150 Personal Development (I and II, 3)** Emphasis on self-understanding and human relationships in general. Influence of societal roles, groups interaction, and contemporary cultural issues on individual development. (Lec. 3) Staff

**200 Life-Span Development I (I and II, 3)** For students who intend to enter a profession dealing with children. Physical, social, mental, emotional growth and development, and interrelations among them from birth to puberty. (Lec. 3) Staff

**201 Life-Span Development II (I and II, 3)** For students entering the human services. Introduction to social, mental, emotional growth and development, and interrelations among them. Emphasis on adolescence through senescence. (Lec. 3) Staff

**202 Fundamentals of Preschool Education (I and II, 2)** Philosophy and theory basic to teaching and guiding the young child. Restricted to professional and semiprofessional persons with experience in the field. (Lec. 2) Pre: permission of instructor. Staff

**203 Introduction to Work with Children (I and II, 3)** Theory and practice in care, teaching, and guidance of preschool children. Lectures, discussion, and participation in nursery school. (Lec. 2, Lab. 2) Pre: 200. Nursery School Staff

**220 Gerontology: Theory and Application (I, 3)** Introduction to the study of aging processes: biological, psychological, and social theories. Health, social and other age-related problems will be examined in the classroom and in interaction with older people. (Lec. 2, Rec. 1) Staff (S)

**221 Work with the Aging (II, 3)** Includes theoretical, ethical, and practical aspects of work with the aging. Each student will have ongoing field experience in a setting with older people. Own transportation desirable. (Lec. 2, Lab. 2) Pre: 220. Staff

**301 Curriculum for Young Children (I, 3)** Program planning for nursery school and kindergarten. Theory and teaching techniques that foster full development of the young child through language, arts, creative activities, science, and mathematics. Participation in community nursery schools. (Lec. 2, Lab. 3) Pre: 203. Staff

**302 Literature for Children (I or II, 3)** Literary heritage of American children and criteria for the selection and presentation of literature to children. (Lec. 3) Pre: junior standing. Staff

**303 Nursery School Practicum (II, 4)** Supervised participation in the nursery school. Discussion and conferences. (Lec. 2, Lab. 4) Pre: 301 or consent of instructor. Nursery School Staff

**304 Contemporary Philosophies of Guiding Children (I and II, 3)** Factors involved in developing a philosophy of guidance of children and adolescents. The evolution of present-day theory. Contemporary writers read and discussed. (Lec. 3) Pre: 203 or permission of department. Staff

**305 Child Care: Changing Patterns (I, 3)** Comprehensive study of child care, historical background and development, administration of centers, sociological problems, legislation, new trends in programs. Guest lecturers, related field observations. (Lec. 3) Pre: 203 or permission of department. Staff

**310 Adolescent Growth and Development (I and II, 3)** Physical, psychological, social, and emotional growth and development of individual during adolescent years. (Lec. 3) Pre: 200 or PSY 232. Staff

**330 Marriage and Family Relationships (I and II, 3)** Male-female relationships in courtship and the family system as influenced by personality and culture in a changing society. Professional and func-

tional orientation. (Lec. 3) Pre: junior standing. Staff

**350 Human Relations Laboratory** (I or II, 1) Understanding individual behavior in the context of a social group; discussion and selected group dynamics techniques. (Lab. 2) Pre: 150, 200 and permission of instructor. S/U credit. Staff

**357 Family and Community Health** (I and II, 3) Health maintenance throughout life. Specific health concerns of various age groups. Community and world health needs and agencies concerned with meeting these needs. (Lec. 3) Pre: junior standing. Staff

**380 Field Experiences in Community Agencies** (I and II, 8) Supervised experience in community agencies for individuals or groups with special needs. Apply for permission by end of fourth semester. Pre: 12 credits in HCF, permission of department and senior standing. Frank

**400 Child Development: Advanced Course** (I and II, 3) Presentation of theory of human development and consideration of some of the classical and current investigations in the field. (Lec. 3) Pre: 200 or equivalent. Staff

**406 Growth and Development During Infancy** (I or II, 3) Study of developmental sequences from birth to two years with emphasis on biological, psychological, social and environmental influences affecting growth. Laboratory periods consist of observation and experience with infants in various settings. Pre: 200 and permission of instructor. (Lec. 2, Lab. 2) Staff

**420 Human Development During Adulthood** (I or II, 3) Major social and cultural factors influencing development after physiological maturity and prior to senescence. Major theorists and normal crises of adulthood. (Lec. 3) Pre: 200 or 310 or equivalent. Staff

**421 Death, Dying, and Bereavement** (I or II, 3) Exploration of human death, dying, and bereavement. Focus on biomedical, psychological, and sociocultural dimensions of the topic. (Lec. 3) Knott

**422 Aging: Case Coordination** (I, 3) Explores concepts, principles, methods, and models of case coordination for older people; client characteristics and needs; environmental resources; assessment, coordination, evaluation, and advocacy. (Lec. 3) Pre: 220 and one other aging-related course or permission of instructor. N.C. Kowalski

**430 Family Interaction** (I and II, 3) Interdisciplinary approach to the dynamics of intrafamily relationships, interactions of family units and family members with elements of the sociocultural environment. (Lec. 3) Pre: 330 or SOC 100. Staff

**431 Family and the Elderly** (I or II, 3) Emphasis on the elderly in analysis of intergenerational organization and relationships. Cultural values, psychosocial factors, economic considerations, and societal trends relative to family life. (Lec. 3) Cooper and Spence

**432 Perspectives on Parenting** (I or II, 3) Comprehensive study of the central issues, research and recent developments in the field of parenting; the impact of the behavioral sciences and social change on parents. (Lec. 3) Pre: 200 or permission of instructor. Greene

**433 Family Life Education** (I or II, 3) Interdisciplinary consideration of relationships between the sexes during childhood and adolescence, including: family health, normal psychosexual development, marriage, ethics, sex education, teaching of family relations. (Lec. 3) Pre: 330 or permission of department. Staff

**434 Children and Families in Poverty** (I or II, 3) Interdisciplinary approach to understanding culturally and economically deprived people. Some experience working with such individuals or groups. (Lec. 2, Lab. 2) Pre: permission of department. Staff

**435 Developmental Assessment in Early Childhood** (SS, 6) Fundamentals and procedures for competency-based assessment in psychomotor, language, cognitive, social and pre-academic skills with curriculum implications. Lectures and laboratory experiences provide theory and practice within a developmental framework. (Lec. 4, Lab. 4) Pre: student teaching or equivalent experience and permission of instructor. Rae

**437 (or SOC 437) Law and Families in the United States** (I or II, 3) Seminar to investigate family roles, relationships, rights and responsibilities as defined by the law. Emphasis on explicit and implicit family policy revealed in the various branches of law. (Sem. 3) Pre: 330 or SOC 212, or permission of instructor. Christner and Zweig

**450 Introduction to Counseling** (I and II, 3) Introduces students in human sciences in both professional and paraprofessional settings to interviewing and counseling skills. Integrates theory, practice, and application by didactic and experimental learning. (Lec. 3) Pre: graduate standing or permission of department. Staff

**497, 498 Special Problems** (I and II, 1-3 each) Open to qualified seniors or graduate students who wish to do advanced work. (Lec. or Lab. according to nature of problem) Pre: senior standing and permission of department. Staff

**500 Child Development Seminar** (I or II, 3)

**501 Seminar in Early Childhood Education** (I or II, 3)

**502 Cognitive Aspects of Early Childhood Education** (I or II, 3)

**505 Theories and Issues in Human Sexuality** (I or II, 3)

**520 Developmental Issues in Later Life** (I, 3)

**527 Health Care Policy and the Elderly** (II, 3)

**529 Practicum Seminar in Gerontology** (I and II, 1)

**530 Family Relations Seminar** (II, 3)

**535 Families Under Stress: Coping and Adaptation** (I or II, 3)

**550 Vocational Information and Career Development** (I or II, 3)

**551 Counseling Techniques** (I and II, 3)

**553 Counseling Practicum** (I and II, 3)

**554 Individual Appraisal in Human Services** (II, 3)

**555 Gerontological Counseling** (I or II, 3)

**559 Counseling of Women** (I or II, 3)

**560 Group Procedures in Counseling** (I and II, 3)

**562 Organization Development in Human Services** (II, 3)

**563 Marital and Family Counseling I** (I, 3)

**564 Marital and Family Counseling II** (II, 3)

**565 Family Counseling Practicum** (I and II, 3)

**567 Principles and Practices of Student Personnel Services in Higher Education** (I, 3)

**568 Organization and Administration of Student Personnel Services in Higher Education** (II, 3)

**570 The Study of Children and Families** (I and II, 3)

**580, 581 Professional Seminar in Counseling** (I and II, 3 each)

**582 Field Experience with Exceptional Children** (I or II, 3)

**583, 584 Master's Counseling Internship** (I and II, 3 or 6 each)

**597, 598 Advanced Study** (I and II, 1-3 each)

## Human Science and Services (HSS)

Acting Dean: Associate Professor Brittingham

**222 Introduction to Human Science and Services** (I and II, 3) Survey of contemporary human service needs and delivery systems with emphasis on historical development, values, ethics, agency structures and functions, and consumers. (Lec. 3) Pre: any one of the following: ECN 125, PSC 113, SOC 102, PSY 113, HCF 200 or 201. Staff

**320 Introduction to Research in Human Science and Services** (II, 3) Consideration of the philosophy, principles, methods, and materials involved in research in the human sciences. Emphasis also on research reading,



writing, and presentation skills. (Lec. 3) Pre: permission of instructor. Staff

**350 Foundations of Public Policy in Human Services (I and II, 3)** The analysis of recent public policy proposals in various areas of human services through differing ideological assumptions of traditional and contemporary views of helping professionals. (Lec. 3) Calabro, Willis and Russo (S)

**390 Topics in Human Science and Services (I or II, 1-3)** Study of contemporary issues in the field of human services. Subject and course content will vary according to expertise and availability of instructor. May be repeated with different topic. Pre: permission of instructor. Staff

**491, 492 Special Problems (I or II, 1-3)** Independent study. Advanced work in the human services under the supervision of a faculty member. Not for graduate credit. Pre: permission of instructor and the Division of Interdisciplinary Studies. Staff

## Industrial Engineering (IDE)

Chairperson: Associate Professor Shao

**220 Industrial Engineering I (II, 3)** Introduction to industrial engineering. Elementary topics in production control, forecasting, networks, linear programming, inventory theory. Use of computer for industrial systems problems. (Lec. 3) Pre: MTH 142, credit or registration in CSC 201. Staff

**240 Manufacturing Processes (II, 2)** Introduction to manufacturing processes. Metrological systems, various unit processes in manufacturing and numerical control of machine tools. Processes, measurement, accuracy, and precision as they relate to deformation, structure, and state of material. (Lec. 1, Lab. 3) Pre: CHM 101, PHY 214, credit or registration in CVE 220. Odney

**320 Industrial Engineering II (I, 3)** Engineering economics. Quantitative modeling in engineering economics. Risk and uncertainty. Statistical decision analysis and operations research techniques in engineering economics. (Lec. 3) Pre: CSC 201, credit or registration in IDE 411, 432. Staff

**325 Computer Solution in Industrial Engineering Problems (II, 3)** Problems in mathematical programming, inventory and production systems, networks, and other large scale systems where computer is needed to reach a solution. Numerical methods. Introduction to microprocessor. (Lec. 3) Pre: CSC 201, IDE 411, 432. Shao

**331 Industrial Manufacturing Processes I (I, 3)** Introduction to the fundamentals of chip forming processes in manufacturing

and their relation to materials deformation produced by the interaction of the cutting tools with the materials. Emphasis on what the processes will do, how they do it, their accuracy, relative advantages and limitations, and relation to surface integrity of machine surface. (Lec. 3) Pre: CCR 800-293. Staff

**332 Industrial Manufacturing Processes II (II, 3)** Application and practical fundamentals of forming, casting, joining processes in manufacturing and their relation to deformation, structure or state of material. Includes study of non-traditional processes, such as electrodischarge machining, etc. (Lec. 3) Pre: 331. Staff

**350, 351 Industrial Engineering Systems Design I, II (I and II, 3 each)** Design and analysis of systems of production facilities and materials handling. Compensation, production, and inventory control systems. Applications of and case problems in operations research, probability and statistics, engineering economy, and other foundation areas. Introduction to simulation. Design and analysis of industrial engineering systems. (Lec. 3) Pre: for 350: 320, 412, 432; for 351: 350, 433. Staff

**391, 392 Special Problems in Industrial Engineering (I and II, 1-3 each)** Independent study and seminar work under close faculty supervision. Discussion of advanced topics in preparation for graduate work. Pre: junior standing and permission of department. Staff

**404 Engineering Economy (I, 3)** Effects of economics on engineering decisions in design, selection, and replacement of equipment and evaluation of project proposals. Theory of depreciation and obsolescence. (Lec. 3) Pre: ECN 125, MTH 142. Not open to students with credit in 220. Staff

**411 Engineering Statistics I (I, 3)** Elementary probability theory, random variables, and probability distributions. Moment generating functions, expected values, bivariate normal distributions. Introduction to applied statistics in engineering. (Lec. 3) Pre: MTH 243. Staff

**412 Engineering Statistics II (II, 3)** Continuation of 411. Estimation, hypotheses tests, sampling theory, linear regression. Other engineering applications of applied statistics. (Lec. 3) Pre: 411. Staff

**430 Design and Analysis of Compensation Systems (II, 3)** Wage and employment theory, job evaluation, motivational systems, supplemental payments; labor force loading, leveling and scheduling. Analysis of influence of unions on labor price theory. (Lec. 3) Pre: senior standing. Staff

**432 Operations Research I (I, 3)** Introduction to major areas of operations research and their application to systems analysis. Linear programming, game theory, elementary network analysis, and related topics. (Lec. 3) Pre: MTH 243, 215 or equivalent. Staff

**433 Operations Research II (II, 3)** Introduction to inventory and replacement models, queuing theory, simulation, simple stochastic models, and their relation to selected problems. (Lec. 3) Pre: 412, MTH 243. Staff

**435 Introduction to Operations Research (I and II, 3)** Major areas of operations research and their application in systems analysis; development of models and techniques for solving problems such as linear programming, networks, queuing, inventory, and simulation. (Lec. 3) Pre: MTH 243 or equivalent. Not for undergraduate major credit in industrial engineering. Staff

**440 Materials Processing and Metrology I (II, 3)** Analyses of materials behavior characteristics under dynamic loading conditions for tools and cutting materials. Thermal analyses, mechanics of machine systems, power and efficiency. Processing control systems such as digital control, analog control, and numerical control. Design and analyses of systems of metrology. (Lec. 2, Lab. 3) Pre: CHE 333 or 437, CVE 220. Staff

**441 Metal Casting (II, 2)** An introduction to the field of metal casting. Areas covered include sand casting, investment casting, die casting, permanent mold casting, risering and gating, alloys, solidification phenomena, and casting design. (Lec. 1, Lab. 3) Pre: 240, CHE 333 or 437. Not for graduate credit. Gardiner

**442 Manufacturing Engineering (I, 3)** Engineering analyses of unit processes common to manufacturing. Bulk deformation, sheet forming, machining, and joining processes. Topics in processing control systems such as numerical control (NC and CNC) and computer-aided manufacturing (CAM). (Lec. 2, Lab. 3) Pre: 240, MCE 263, CHE 333 or 437. Not for graduate credit. Odney

**491, 492 Special Problems (I and II, 1-6 each)** Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. (Lec. or Lab. according to nature of problem.) Credits not to exceed a total of 12. Pre: permission of department. Staff

**500 Network Application in Industrial Engineering (II, 3)**

**510 Human Factors (II, 3)**

**513 Statistical Quality Control (I, 3)**

**514 Special Topics in S.Q.C. (I, 3)**

**517 Applied Control Theory in Industrial Engineering (I, 3)**

- 520 **Material Handling** (I, 3)  
 525 **Simulation** (II, 3)  
 533 **Advanced Statistical Methods for Research and Industry** (I, 3)  
 535 **Industrial Reliability Engineering** (II, 3)  
 540 **Production Control and Inventory Systems** (I, 3)  
 541 **Materials Processing and Metrology II** (I, 3)  
 542 **Introduction to Computer Aided Manufacturing** (I, 3)  
 545 **Manufacturing Engineering: Design, Analysis, Synthesis** (II, 3)  
 550, 551 **Advanced Topics in Probabilistic Operations Research I and II** (I and II, 3 each)  
 555 **Engineering Applications of Mathematical Programming I** (I, 3)  
 556 **Engineering Applications of Mathematical Programming II** (II, 3)  
 565 **Theory of Scheduling** (II, 3)  
 570 **Operations Research Modeling in Health Care** (II, 3)  
 591, 592 **Special Problems** (I and II, 1-6 each)

## Insurance (INS)

Chairperson: Associate Professor Lord  
 (Finance and Insurance)

- 301 **Fundamentals of Risk Management and Insurance** (I and II, 3) Basic course in risk management and insurance. Emphasis on personal risk management and the personal lines coverages: homeowners insurance, personal automobile insurance, and basic life insurance policies. (Lec. 3) Staff
- 313 **Commercial Property—Liability Insurance** (II, 3) Analysis of the basic commercial insurance coverages for property, general liability, and commercial auto exposures. Included will be an examination of the important commercial package policies. (Lec. 3) Staff
- 325 **Life Insurance** (II, 3) Analysis of the many types of life insurance and health insurance contracts, computation of premiums and reserves and contract interpretation. Included is an analysis of the uses of life insurance contracts. (Lec. 3) Note: course prepares for R.I. state licensing examination in life and accident and health insurance and for Part I of charter life underwriter examination. Staff
- 414 **Advanced Commercial Property—Liability Insurance** (I, 3) Examination of specialized insurance coverages for commercial property and liability exposures including ocean and inland marine insurance, commercial crime insurance, surety-ship and professional liability. (Lec. 3) Pre: 313 or permission of instructor. Staff

433 **Social Insurance** (I, 3) Analysis of the network of state and federal economic security programs including the OASDHI system, unemployment compensation, temporary disability programs and the workers' compensation system. (Lec. 3) Pre: ECN 125 and 126 or permission of the instructor. Staff

471 **Topics in Insurance** (II, 3) Analysis of selected topics and current issues in the insurance marketplace. Topics will vary from semester to semester. (Lec. 3) Pre: FIN 331; INS 301, 313, and 325 or permission of instructor. Staff

491, 492 **Directed Study** (I and II, 3) Directed readings and research work including insurance problems under the supervision of a member of the staff. Pre: permission of instructor and junior or senior standing. Staff

510 **Risk and Insurance** (I, 3)

560 **Management of Insurance Enterprises** (II, 3)

570 **Risk Management** (II, 3)

## Irish (IRE)

391 **Irish Literature in Translation to 1607** (I, 3) Reading and analysis in English of Irish Gaelic literature through the Classical Age. (Lec. 3) McNab (F)

392 **Irish Literature in Translation from 1608** (II, 3) Reading and analysis in English of Irish Gaelic literature from the end of the Classical Age through the Gaelic Revival. (Lec. 3) McNab (F)

## Italian (ITL)

Section Head: Professor Trivelli

101 **Beginning Italian I** (I and II, 3) Elements of the language, pronunciation, grammar, inductive reading; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Italian. Staff (F)

102 **Beginning Italian II** (I and II, 3) Continuation of 101. Pre: 101 or equivalent. Staff (F)

103 **Intermediate Italian I** (I and II, 3) Development of facility in reading texts of moderate difficulty, supplemented by further work in grammar, conversation, and composition. (Lec. 3) Pre: 102 or equivalent. Staff (F)

104 **Intermediate Italian II** (I and II, 3) Continuation of 103. Pre: 103 or equivalent. Staff (F)

205, 206 **Conversation and Composition** (I and II, 3 each) Intensive course in conversation and composition. Promotes facility in speaking and understanding idiomatic Italian. (Lec. 3) Pre: 104 or permission of department. Staff

301, 302 **Civilization of Italy** (I and II, 3 each) The most important aspects of Italian civilization. 301: From the Middle Ages to the end of the Renaissance. 302: From the seventeenth century to the present. (Lec. 3) Pre: 104 or permission of department. Staff

305 **Advanced Conversation and Composition** (I or II, 3) Intensive practice in spoken and written Italian. (Lec. 3) Pre: 206 or permission of instructor. In alternate years, next offered fall 1985. Staff

309 **Techniques of Translation** (I or II, 3) Principles and techniques of translating written Italian into English and vice versa. Text materials of different types used in practical work: scientific, journalistic, business and literary language. (Lec. 3) Pre: 205 or 206 or permission of department. Viglionese

325, 326 **Introduction to Italian Literature** (I and II, 3 each) Appreciation of literature. Representative texts of Italian narrative, drama, and lyric poetry. Elements of the methods of criticism. (Lec. 3) Pre: 104. Staff (A)

391, 392 **Masterpieces of Italian Literature** (I and II, 3 each) Reading in English translation of selected Italian authors of greatest significance. 391: Medieval and Renaissance. 392: Post-Renaissance to twentieth century. (Lec. 3) May not be used for major credit in Italian. Staff (A)(F) for 391; (A) for 392.

395 **Dante's Divine Comedy** (I or II, 3) Reading in English translation of Dante's chief work. (Lec. 3) May not be used for major credit in Italian. In alternate years, next offered spring 1986. Viglionese (A) (F)

408 **The Italian Language** (I or II, 3) Advanced study of the structure of the Italian language. Analysis of linguistic elements as found in representative authors from thirteenth to twentieth century. (Lec. 3) Pre: 104 or permission of instructor. In alternate years, next offered fall 1985. Trivelli

455 **Selected Italian Authors** (I or II, 3) Works of one or more major authors of Italian literature. Specific author(s) designated the semester before the course is to be given by the department. (Lec. 3) Pre: 325 or 326 or permission of instructor. In alternate years, next offered fall 1985. Sillanpoa

465 **Topics in Italian Literature** (I or II, 3) Special topics or themes in Italian literature not treated or emphasized in other courses. (Lec. 3) Pre: 325 or 326 or permission of in-

structor. In alternate years, next offered spring 1986. Staff

**481, 482 The Works of Dante Alighieri** (I and II, 3) Dante's works with special attention given to analysis and interpretation of *The Divine Comedy* from the social, religious, philosophical, and political viewpoints of the Middle Ages. (Lec. 3) Pre: 325 or 326 or permission of instructor. In alternate years, next offered 1984-85. Viglionese

**497, 498 Directed Study** (I and II, 3 each) Designed particularly for the advanced student. Individual research and reports on problems of special interest. (Lec. 3) Pre: acceptance of a project by a member of the staff and department approval. Staff

## Journalism (JOR)

Chairperson: Professor Lichtenstein

**110 Introduction to Mass Communications** (I and II, 3) Survey of mass media emphasizing newspapers, wire services, magazines, radio, and television. Examination of economic and news functions of each; role of advertising and public relations. Legal and ethical considerations, restrictions on the press; the mass media as an institution. Recommended for non-majors. (Lec. 3) Staff

**212 News Writing and Reporting** (I and II, 3) Fundamentals of news gathering and factual writing for the print media. Practice in writing news and feature stories and covering news events, with evaluation of each student's work. Students are required to pass a writing skills test and to type. (Lec. 2, Lab. 2) Pre: sophomore standing or permission of instructor. Staff

**215 Pictorial Journalism** (I and II, 3) Introduction to use of photography in the print communication media with instruction and practice in basic techniques of picture-taking, processing, and editing. (Lec. 2, Lab. 2) Pre: permission of instructor. Staff

**271 Broadcast Journalism I** (I and II, 3) Gathering and processing news for radio. Principles of broadcast writing and reporting. Techniques of anchoring. Laboratory work includes production of newscasts. (Lec. 2, Lab. 2) Pre: 212 or permission of instructor. Snodgrass

**300 Media Criticism in America** (II, 3) Analysis of selected writings of media critics monitoring the performance of newspapers, magazines, broadcasting, and advertising. Practice in writing media criticism. (Lec. 3) Snodgrass

**324 Magazine Article and Feature Writing** (II, 3) Practice in planning, researching, and

writing articles and feature stories for magazines and newspaper feature sections. Discussion of markets, freelance and job opportunities. Articles written and submitted to publications. (Lec. 3) Pre: 212, junior standing or permission of instructor. Roberts and Staff

**325 Copy Editing** (I and II, 3) Practice in news selection, copy editing, headline writing, illustration, and page makeup of newspapers. (Lec. 2, Lab. 2) Pre: 212 or permission of instructor. Staff

**326 Advanced Reporting** (I and II, 3) Planning, developing, and writing complex news stories for publication. Class sessions and outside assignments include press conferences, investigative and interpretive reporting, and reporting in depth. (Lec. 2, Lab. 2) Pre: 212, junior standing or permission of instructor. Staff

**334 History of Journalism in the United States** (I, 3) Development of American newspapers, magazines, and broadcast industry with analysis of the ideas which have changed American journalism. Exploration of the journalists' experience at periods in American history; the effects of economic and social changes on the press. (Lec. 3) Pre: 110, junior standing, or permission of instructor. Roberts

**372 Broadcast Journalism II** (I and II, 3) Gathering and processing news for television. Principles of television news writing, reporting, production, and anchoring. Laboratory work includes on-camera techniques. (Lec. 2, Lab. 2) Pre: 271 or permission of instructor. Snodgrass

**399 Field Work in Newspaper Publications** (II, 1) One-week practicum in the preparation of an entire edition of a daily newspaper, including reporting, editing, photography, editorial writing, and page makeup. (Lab. 3) Pre: junior standing and permission of instructor. S/U credit. Staff

**400 Opinion and Interpretation in Journalism** (II, 3) Analysis of editorials, columns and reviews such as movies, photography, music, and fashion. Practice in writing critical columns and editorials. (Lec. 3) Pre: 212 and junior standing. Snodgrass

**434 Mass Media Issues** (I and II, 3) Ethical issues and other problems in mass communications affecting journalists and society in general, based on selected readings, study and discussion of current news stories. (Lec. 3) Pre: senior standing or permission of instructor. Thompson

**435 Theory of Communication** (I, 3) Principles of communication. Emphasis on the effects of mass communications, propaganda techniques in the mass media, and public opinion formation and change. (Lec. 3) Pre:

senior standing or permission of instructor. Staff

**436 Fundamentals of Communication Research** (II, 3) Introduction to the techniques of concept formation, data collection and analysis with special reference to mass communication content, structure, and process. (Lec. 3) Pre: senior standing or permission of instructor. Staff

**438 Mass Media Law** (I and II, 3) Role of government and the law in the communication of news. Legal problems in the mass media including basic laws affecting freedom of the press, press privileges and responsibilities. Case studies. (Lec. 3) Pre: senior standing or permission of instructor. Staff

**441 International Communications** (I, 3) Comparison of the major mass media systems of the international community: their development, structure, and content as well as their roles in national and international relations. (Lec. 3) Pre: senior standing or permission of instructor. Staff

**442 Independent Study and Projects in Mass Communications** (I and II, 1-3) Individual reading programs, research or projects in journalism and mass communications. Pre: junior standing and acceptance of a project for supervision by a member of the staff. Staff

**452 Public Relations** (I, 3) Principles and procedures in public relations: emphasis on role of the public relations practitioner as a specialist in communications; analysis of publications produced as a part of public relations. (Lec. 3) Pre: 212, senior standing or permission of instructor. Thompson

**461 Internship in News Writing and Reporting** (I and II, 3) Assignment to an approved print medium sponsor for reporting and writing experience. Fifteen working days (or 120 hours) of practice time and a one-hour weekly meeting. (Lec. 1, Prac. 8) Pre: 326 or 324, senior standing and permission of instructor. S/U credit. Staff

**462 Internship in Editing** (I and II, 3) Assignment to an approved sponsor for editing and/or related work experience. Fifteen working days (or 120 hours) of practice time and a one-hour weekly meeting. (Lec. 1, Prac. 8) Pre: 325 and 326, senior standing and permission of instructor. S/U credit. Staff

**463 Internship in Radio Journalism** (I and II, 3) Assignment to an approved sponsor for practicum in gathering and processing news for broadcast, or for development and/or production of public affairs materials for broadcast. Fifteen working days of practice time and a one-hour weekly meeting. (Lec. 1, Prac. 8) Pre: 271 (for radio

assignment), 271 and 372 (for TV); senior standing and permission of instructor. S/U credit. Snodgrass

**464 Internship in Public Relations (II, 3)** Assignment to an approved sponsor for practical experience in public relations work. Fifteen working days of practice time and a one-hour weekly meeting. (Lec. 1, Prac. 8) Pre: 212 and 452, senior standing, and permission of instructor. Not for graduate credit. S/U credit. Thompson

**465 Internship in Television Journalism (I and II, 3)** Assignment to an approved sponsor for practical experience in gathering and processing news and/or public affairs material for television. Fifteen working days of practice and one-hour weekly meeting. (Lec. 1, Prac. 8) Pre: 372 and permission of instructor. Not for graduate credit. S/U credit. Snodgrass

## Labor Studies and Labor Relations (LRS)

Director: Professor Schmidt

- 520 Labor Union Government and Structure (I and II, 3)**
- 521 (or PSC 521) International and Comparative Trade Unions and Labor Relations (I or II, 3)**
- 529 (or ECN 529) Human Resource Economics I (I, 3)**
- 530 (or ECN 530) Human Resource Economics II (II, 3)**
- 531 Protective Labor Legislation (I or II, 3)**
- 532 (or SOC 532) Sociology of Work Organizations (II, 3)**
- 541 Labor Relations Law (I or II, 3)**
- 542 Labor Relations and Collective Bargaining: Private Sector (I or II, 3)**
- 543 Labor Relations and Collective Bargaining: Public Sector (I or II, 3)**
- 544 (or HIS 544) Colloquium in Labor History (I or II, 3)**
- 545 Labor Dispute Settlement (II, 3)**
- 580 Professional Seminar: Labor Relations (I or II, 3)**

## Languages (LAN)

Chairperson: Associate Professor Cashdollar

**191 Beginning Foreign Language I (I and II, 3)** Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation in a foreign language not included in regular departmental offerings. (Lec. 3) Pre: no prior experience in specific language. May be repeated for different languages. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

**192 Beginning Foreign Language II (I and II, 3)** Continuation of 191. Pre: 191 or equivalent in same language. May be repeated for different languages. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

**193 Intermediate Foreign Language I (I and II, 3)** Development of facility in speaking, listening comprehension, writing, and reading texts of moderate difficulty in a language not included in regular departmental offerings. (Lec. 3) Pre: 192 or equivalent, in the same language as 193. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

**194 Intermediate Foreign Language II (I and II, 3)** Continuation of 193. Pre: 193 or equivalent, in the same language as 194. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

## Latin (LAT)

Chairperson: Associate Professor Cashdollar (Department of Languages)

**101 Beginning Latin I (I and II, 3)** Latin grammar and syntax. Exercises in reading prose. (Lec. 3) Pre: no prior Latin. Staff (F)

**102 Beginning Latin II (I and II, 3)** Continuation of 101. Pre: 101 or equivalent. Staff (F)

**301, 302 Directed Readings in Latin (I and II, 3-12)** Study of Latin writers selected in accordance with the needs and background of the student. May be repeated with different topics for additional credit. (Lec. 3-12) Pre: 102 or equivalent and permission of instructor. Staff (F)

**497, 498 Directed Study (I and II, 3 each)** Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

## Latin American Studies (LAS)

Committee Chairperson: Assistant Professor Morin

**397 Directed Study for Senior Research Project (I, 3)** Research in a particular area of Latin American studies. Project must be approved by the LAS Committee. Pre: approval of LAS Committee and instructor. Staff

The following are related courses offered in the Departments of Art, Economics, History, Languages, Political Science, Sociology and Anthropology, and Speech Communication, and in Foreign Language Film.

## Anthropology

- 303 New World Prehistory
- 315 Cultures and Societies of Latin America
- 324 Peasant Societies
- 470 Problems in Anthropology

## Art

- 283 Topics in Non-European Art

## Economics

- 338 International Trade and Policy
- 363 Economic Growth and Development

## Foreign Language Film

- 327 Foreign Narrative Film

## History

- 180 Introduction to Latin American Civilization
- 382 History of Modern Latin America
- 383 History of Modern Mexico
- 391 Directed Study or Research
- 580 Colloquium in Latin American History

## Political Science

- 201 Introduction to Comparative Politics
- 431 International Relations
- 432 International Government

## Portuguese

- 311, 312 Topics in the Civilization of the Portuguese-Speaking World
- 335, 336 Topics in the Literature of the Portuguese-Speaking World
- 497, 498 Directed Study

## Spanish

- 305 Early Spanish-American Literature and Culture
- 306 Modern Spanish-American Literature and Culture
- 487 Modern Spanish-American Narrative
- 497, 498 Directed Study
- 571 Modern Spanish-American Authors
- 572 Evolution of Spanish-American Culture and Thought
- 590 The Hispanic Presence in the United States

## Speech Communication

- 473 Intercultural Communication

## Library (LIB)

Dean: Professor Young

## 345 Nutritional Literature and Its Communication

See Food Science and Technology, Nutrition and Dietetics 345.

## 405 Fine Letterpress Printing (I or II, 3)

History, theory, and practice of fine printing by letterpress, with emphasis on the work of the great private presses. Pre: permission of instructors. CCE only. Maslyn and Gutchen



## Library Science (LSC)

Students in good standing may take up to six hours of graduate-level Library Science courses in their senior year with the permission of the Dean of the Graduate Library School.

- 501 Foundations of Library Science (I or II, 4)
- 502 Library Administration (I and II, 3)
- 503 Collection Development (I and II, 3)
- 504 Reference and Information Services (I and II, 3)
- 505 Organization of Library Materials (I and II, 3)
- 506 Technical Services (I, 3)
- 510 History of Books and Printing (I, 3)
- 511 Comparative Librarianship (I, 3)
- 512 History of Libraries and Librarianship (I, 3)
- 513 Intellectual Freedom and Censorship (II, 3)
- 514 The Library in Society (I, 3)
- 515 The Library and the Communication Process (II, 3)
- 516 Librarianship and Public Policy (I or II, 3)
- 520 The School Library/Media Center (I, 3)
- 521 Public Library Service (I, 3)
- 522 College and University Library Service (II, 3)
- 523 Special Library Service (II, 3)
- 527 Seminar in Library Administration (II, 3)
- 528 Media in the Library (I, 3)
- 529 Theory and Production of Library Media Communications (I, 3)
- 530 Reading Interests of Children (I, 3)
- 531 Reading Interests of Adolescents (II, 3)
- 533 Children's Library Materials (I, 3)
- 536 Storytelling (SS, 3)
- 537 Health Sciences Librarianship (II, 3)
- 538 Law Librarianship (I, 3)
- 540 Library Materials in the Humanities (I or II, 3)
- 541 Library Materials in the Social Sciences (II, 3)
- 542 Library Materials in Science and Technology (I or II, 3)
- 543 Government Publications (I or II, 3)
- 544 Information Science for Librarians (II, 3)
- 545 Technical Information Centers (II, 3)
- 546 Computer Systems in Library Automation (I, 3)
- 547 Online Searching and Services (I or II, 3)
- 550 Advanced Cataloging (II, 3)
- 551 Organization of Nonprint Materials (I or II, 3)
- 560 Research in Librarianship (II, 3)
- 562 Administration of Special Collections, Archives, and Manuscripts (I or II, 3)
- 564 Introduction to Library Conservation (I or II, 3)
- 565 Rare Book Librarianship (I, 3)

- 566 Bibliographic Instruction in Libraries (II, 3)
- 591, 592, 593 Independent Work (By appt., 1-3 each)
- 595 Professional Field Experience (I and II, 1-6)
- 596 School Library Media Center Practicum (II, 3 or 6)

## Linguistics (LIN)

Section Head: Professor Rogers

- 201 Introduction to the Study of Language (I or II, 3) Introduction to the analysis and description of a language's sounds, forms, syntax, and meaning; the relationship of linguistics to other disciplines, and a survey of major schools of linguistic thought. Rogers and Arakelian
- 202 Introduction to the Study of Language Evolution (II, 3) The construction of theoretical models; the reconstruction of earlier stages of language, based on the structure of modern languages and their families. Pre: 201, APG 200 or ENG 330. Rogers
- 302 Morphology and Phonology (I or II, 3) Analysis of phonological and morphological systems other than those of English; extensive practical and comparative exercises. Pre: 201 or ENG 330. Rogers
- 320 Sociolinguistics (I, 3) Presentation of the major areas of micro- and macro-sociolinguistics: speech acts, registers, repertoires, language attitudes, social correlates of phonological and syntactic features and changes. (Lec. 3) Pre: 201 or APG 200. Rogers, Martin, and Pollnac
- 330 Dynamics of Language Distribution (II, 3) Geolinguistic survey of present-day distribution of languages, and of factors affecting their spread and decline. Minority and colonial languages; language maintenance efforts; language contact phenomena. (Lec. 3) Pre: 201. Rogers
- 402 Syntactic Analysis (I and II, 3) A study of primary sources in contemporary research into syntactic structures. Emphasis on developing the ability to construct and test linguistic models. (Lec. 3) Pre: 201 or ENG 330 or permission of instructor. Arakelian
- 414 Romance Linguistics (II, 3) Evolution of the major literary Romance languages from late Latin with emphasis on phonology and morphology. The diffusion and dialectal fragmentation of Romance. (Lec. 3) Pre: 202 or FRN 205, SPA 205, ITL 205, or permission of department. Some knowledge of Latin recommended but not required. Not for graduate degree program credit. Rogers

**431 Applied Linguistics in the Language Laboratory** (I, 1) Principles of contrastive phonology and syntax and their application to the preparation, use, and evaluation of tape drills. Use of language laboratory equipment monitoring student exercises. Recommended for prospective teachers of language. (Lec. 1) Pre: 9 credit hours of language courses numbered 300 or above, or permission of department. Staff

**497, 498 Directed Study** (I and II, 3 each) Individual research and reports on problems of special interest. Pre: 201 and acceptance of a project by a member of the staff and departmental approval. Staff

The following are related courses offered in the Departments of Anthropology, Communicative Disorders, English, Languages, Philosophy, Psychology, and Speech:

- APG 200 Language and Culture
- APG 409 Anthropological Linguistics
- CMD 373 Phonetics
- CMD 375 Language Development
- ENG 337 Varieties of American English
- ENG 530 History of the English Language
- ENG 534 Structure of the English Language
- ENG 536 Problems in Linguistics and Literature
- FRN 503 History of the French Language
- ITL 408 The Italian Language
- PHL 440 Philosophy of Language
- PSY 388 Psychology of Language
- SPA 409 History of the Spanish Language
- SPE 410 Semantics

## Literature in English Translation

Coordinator: Associate Professor Kuhn (Languages)

The following courses, offered within the Department of Languages may be used for major credit in Comparative Literature Studies. They may not be used for major credit in English or Languages.\*

### Comparative Literature Studies

- 250 Themes and Myths
- 335 Interdisciplinary Studies in Comparative Literature
- 450 Studies in Comparative Literature

### Classics

- 394 Greek Mythology and Religion: Gods and the Universe
- 395 Greek Mythology: Gods, Heroes, and Humans
- 396 Mythology of the Romans

\*CLA 394, 395, 396 may be used for major credit in Classics; RUS 391, 392 may be used for major credit in Russian.

**French**

- 391 Literature to 1789 in Translation  
 392 Nineteenth-Century Literature in Translation  
 393 Twentieth-Century Literature in Translation  
 394 Literary Topics in Translation

**German**

- 391, 392 Masterpieces of German Literature  
 393 Topics in German Literature

**Italian**

- 391, 392 Masterpieces of Italian Literature  
 395 Dante's Divine Comedy

**Russian**

- 391, 392 Masterpieces of Russian Literature

**Spanish**

- 391, 392 Spanish Literature in Translation

The following courses offered within the Department of English may be used for major credit in Comparative Literature Studies and in English. They may not be used for major credit in Languages.

**English**

- 160 Masterpieces of Literature  
 366 Greek and Roman Drama  
 367 The Epic  
 468 Traditions of the Continental Novel  
 561 Modern European Novel

Literature in English Translation courses and literature courses offered within the Departments of English and Languages constitute part of the offerings for a major in Comparative Literature Studies.

**Management (MGT)**

Chairperson: Professor Overton

**110 Introduction to Business** (I and II, 3) Nature, philosophy, objectives, and scope of American business system. Emphasis in the interrelations of the functional areas. (Lec. 3) Staff (S)

**227 Business Communications** (II, 3) Effective business communication with interdisciplinary approach. Practice and discussion of basic types of business messages, written and oral. Integrated case problems to develop and present effective reports. (Lec. 3) Staff (Cw)

**300 Introduction to Management and Supervision** (I or II, 3) Functions of human resources management including group behavior, interpersonal relations, recruitment, and justice determination. Emphasis on developing analytical skills applied to personnel-related problems in organizational settings. (Lec. 3) Not open to business administration majors; no credit if 303 has been taken. Staff

**301 Fundamentals of Management** (I and II, 3) Management processes, organizational theory and behavior, quantitative aids, and environmental analysis. Emphasis on developing conceptual and analytical skills through examination of relevant theory, research, and practice. (Lec. 3) Staff

**303 Personnel Administration** (I or II, 3) Role of the personnel function in an organization. Employer-employee problems at various internal levels and their impact on the organization and its environment. Covers such areas as manpower planning, the recruitment process, training, employee relations, pension planning, and occupational safety in the public and private sector. Cases and lectures. (Lec. 3) Pre: 301 recommended. Staff

**304 Organizational Behavior: Individual** (I or II, 3) Interpersonal behavior in industry; human relations problems in complex organizations and analytical and interpersonal skills to deal with the human variable. Case analysis, experiential labs and role playing. (Lec. 3) Staff

**305 Organizational Behavior: Group** (I and II, 3) Theory and practice of work groups in the industrial and business environment. Conceptual and managerial skills for analyzing behavioral effects of group settings on individual, group, and organizational performance. (Lec. 3) Pre: 301; for department majors, 304 or concurrent registration in 304. Staff

**321 Labor Problems** (I, 3) Historical development of labor unions, changing composition of the labor force. Factors determining wage levels and employment in the firm and market. Analysis of mobility and occupational and regional wage differentials; the power of unions to raise wages; the role of investments in the human agent as a factor in economic growth. (Lec. 3) Pre: ECN 126 or permission of instructor. Staff

**326 Word Processing and Equipment Management** (II, 3) Development and use of word processing systems, office equipment, reprographics, and records in industry. Pre: junior standing or permission of department. Staff

**380 Business and Society** (I or II, 3) Business ideologies and practical strategies for the modern corporation in society. Crucial social issues confronting the contemporary manager: changing life-styles, equal employment opportunity, pollution, investment abroad, government regulation, among others. (Lec. 3) Staff

**407 Organization and Management Theory** (I and II, 3) Analysis of complex organizational situations emphasizing managerial problems dealing with structure, coordination, control, and integration. Conceptual skills for organizational analysis, including

model and systems approaches. (Lec. 3) Pre: 301 or permission of instructor. Staff

**408 Organization Development and Change** (I or II, 3) Behavioral science applications to the planning of systematic organizational change and development. Theory, concepts, techniques, and cases for change agents and managers of change. (Lec. 3) Pre: 301, 407, or permission of instructor. Staff

**410 Business Policy** (I and II, 3) Analysis of the multi-functional organizational problems and issues confronting top management. (Lec. 3) Pre: 301, ACC 201, FIN 321, MKT 323, senior standing or permission of instructor. Staff

**422 Labor Law and Legislation** (II, 3) Federal and state labor relations statutes and court and agency decisions pertaining to private and public employment, regulations of trade unions, equal opportunity, wage and hour laws. (Lec. 3) Pre: 321 or permission of instructor. Staff

**423 Labor Relations** (II, 3) Public interest in labor relations and problems involved in effectuating collective bargaining. Major adjustments of public and private management to changes in labor policy of federal and state governments, community, and labor unions. (Lec. 2, Lab. 2) Pre: 303. Staff

**424 Advanced Cases and Problems in Collective Bargaining** (I and II, 3) The examination, discussion, and solving of private and public sector grievance cases and simulated group collective bargaining negotiation problems. (Lec. 2, Lab. 2) Pre: 422, 423, or concurrent registration. Not for graduate credit. Staff

**426 Training and Development Theory and Practice** (I, 3) Development of education programs in industry. Teaching and learning strategies. Needs assessment. Evaluation. Pre: PSY 113 and senior standing. Not for graduate credit. Staff

**431 Advanced Management Seminar** (I or II, 3) Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Lec. 3) Pre: 301. Staff

**435 Compensation Administration** (I and II, 3) Concepts, models, theories, and legislation related to the employee compensation process. Discussion and skill acquisition in job analysis, job evaluation, wage surveys, and performance appraisal. (Lec. 3) Pre: ECN 301, MGT 303 or permission of instructor. Not for graduate credit. Staff

**437 Human Resource Planning, Selection, and Placement** (I and II, 3) Recruitment, selection, and placement of human resources. Integration of human resource plans with organizational strategic plans. Career planning and development. Affirmative action and EEO aspects of selection and

placement. (Lec. 3) Pre: ECN 301, MGT 303 or permission of instructor. Not for graduate credit. Staff

**439 Seminar: Problems and Issues in Personnel and Industrial Relations (I and II, 3)** Central issues, recent developments, review, and integration of functional aspects of Personnel and Industrial Relations (PAIR) career planning for PAIR professionals. Includes written comprehensive examination for PAIR majors. (Lec. 3) Pre: senior standing; personnel management majors only or permission of instructor. Not for graduate credit. Staff

**480 Small Business Management (I, 3)** Investigation and evaluation of the small business enterprise. Current literature studied to enable the student to understand and appreciate the small business. Required project performed with a small organization. (Lec. 3) Pre: senior standing in CBA or permission of instructor. Staff

**482 Entrepreneurship (II, 3)** Procedures for starting and operating one's own business including the following topics: the business idea, personality traits, feasibility analysis, business plan, and functional area basics. Intended for nonbusiness majors. (Lec. 3) Pre: senior or graduate standing and permission. Comerford

**491, 492 Special Problems (I and II, 3 each)** Lectures, seminars, and instruction in research techniques, literature, and other sources of data in the field of organizational management, industrial relations, and law with application to specific individual projects. (Lec. 3) Pre: permission of department. Staff

**530 Management Theory and Practice (I and II, 2)**

## Management Science (MGS)

Chairperson: Professor Jarrett

**101, 102 Introduction to Quantitative Analysis for Business and Economics (I and II, 3 each)** Selected mathematical tools and techniques for analysis of business and economic problems and as aid in process of decision-making. Topics from finite and modern mathematics, applied differential and integral calculus. (Lec. 3) Pre: 101 for 102. Staff (M)

**201, 202 Managerial Statistics (I and II, 3 each)** 201: General statistical methods used in collection, presentation, analysis and interpretation of statistical data. Includes frequency distribution, measures of central tendency and dispersion, probability theory, sampling distribution, central limit theorem, law of large numbers, estimation and tests of hypothesis. Pre: 102 or equivalent. 202: Additional data analysis techniques

including tests of independence and goodness of fit, regression, correlation, analysis of variance, time series, and index. (Lec. 3) Pre: 201. Staff

**207 Introduction to Computing in Management (I and II, 3)** Computer applications in management and programming fundamentals in one of the common computer programming languages—FORTRAN, BASIC, or PL/I. Assigned problems are debugged and run on the computer. (Lec. 3) Staff

**301 Advanced Quantitative Foundations (I, 3)** Mathematical topics and applications useful in analysis of managerial problems, including optimization with constraints, optimization for functions of many variables, multiple integration, differential equations, matrix and linear algebra. (Lec. 3) Pre: 102 or permission of instructor. Staff

**307 Information Systems for Management (I and II, 3)** A survey course providing an overview of computer information systems. Computer hardware, software, business systems, database concepts, data communications, distributed processing, office automation. (Lec. 3) Pre: 207. Staff

**309 Operations Management (I and II, 3)** Production and operations management problems, models for their solution. Problems include project management, design and measurement of work, facilities location and layout, quality control; forecasting, production planning and inventory control. (Lec. 3) Pre: 202 or permission of instructor. Staff

**310 Capacity Planning and Operations Scheduling (II, 3)** Intensified coverage of production planning in manufacturing and service industries. Topics include aggregate planning, capacity planning and control, shop floor activity planning and control, and MRP/CPM relationships. (Lec. 3) Pre: 309 or permission of instructor. Staff

**311 Master Planning and Requirement Analysis (I, 3)** Intensified coverage of operations planning in manufacturing and service organizations. Topics include: times series forecasting, multi-item forecasting, material requirements planning, master production scheduling. (Lec. 3) Pre: 309 or permission of instructor. Staff

**364 Quantitative Analysis of Managerial Operations (I, 3)** Management science techniques for non-majors, including linear programming, decision theory, simulation, and queuing. Applications in the functional areas. (Lec. 3) Pre: 202 or permission of instructor. Staff

**365, 366 Management Science I and II (I and II, 3 each)** 365: Analysis of mathematical and statistical models used in decision-making in management. Deterministic and probabil-

istic models. Various applications to business. Pre: 202 or permission of instructor. 366: Continuation. (Lec. 3) Pre: 365 or permission of instructor. Staff

**370 Topics in Managerial Statistics (II, 3)** Theory and managerial applications of selected topics in statistics, including forecasting techniques, multiple regression, analysis of variance, and experimental and sample designs. (Lec. 3) Pre: 202 or equivalent. Staff

**445 Managerial Applications of Simulation (I, 3)** Evaluation and design of deterministic and probabilistic computer simulation models for operational and strategic levels of management. (Lec. 3) Pre: 202 or permission of instructor. Staff

**450 Forecasting: Computer Applications (I or II, 3)** Forecasting for students of management, finance, accounting, and marketing. Introduction to methods from simple to ARIMA processes. Use of a variety of software systems and languages, including personal software. Pre: 202, 207 or equivalents; senior status or graduate student. Jarrett and Staff

**458 Integrated Production-Logistics Systems (II, 3)** Analysis of integrated logistical support systems within a manufacturing or service firm. Aggregate and multiechelon inventory systems, facility location, material handling, warehousing, and production scheduling. (Lec. 3) Pre: 309 or equivalent. Staff

**470 Managerial Decision Support Systems (II, 3)** Use of computer technology and quantitative methods to assist in the decision-making process. Emphasis on report preparation, presentations, and computer graphics. (Lec. 3) Pre: 202, 207 or permission of instructor. Staff

**475 Bayesian Statistics in Business (I, 3)** Bayesian decision theory as based on the concept of utility and personalistic interpretation of probability. Application of Bayesian inference to decision-making under uncertainty in business. (Lec. 3) Pre: 202 or permission of instructor. Staff

**483 Application Programming Using COBOL (I and II, 3)** Development of business software using COBOL language. Coverage of language syntax; file structures; table processing; sorting; control break reports; editing and validation techniques; maintenance of sequential, direct, and indexed files. (Lec. 3) Pre: 207. Staff

**485 Management of Databases (I, 3)** Concepts and methods in management of data: database objectives, definitions, creations, design and implementation; data structures, data models; integrity security; data dictionaries and administration. Evaluation and use of existing systems. Pre: 483 or permission of instructor. March



**486 Management Systems Analysis and Design** (II, 3) Concepts, methods, and tools used in the design, development, and operation of computer-based information systems. Pre: 483 or permission of instructor. Ageloff and March

**488 Business Software Development Project** (II, 3) Application of computer programming and system development concepts, principles, and practices to a comprehensive business system development project. Use of project management methods, project scheduling and control techniques, formal presentation, and group dynamics in the solution of information systems problems. (Lec. 3) Pre: 483 and 486 or permission of instructor. Ageloff and Kim

**491, 492 Special Problems** (I and II, 1-3 each) Lectures, seminars, and instruction in operations research techniques, emphasis on student research projects. (Lec. 3) Pre: permission of instructor. Staff

**495 Seminar in Management Science** (I or II, 3) Preparation and presentation of papers on selected topics. Pre: 309, senior standing, and permission of instructor. Not for graduate credit. Staff

**500 Computing for Management** (I and II, 2)  
**520 Mathematics for Management** (I, 2)  
**530 Statistics for Management** (I, 2)

## Marketing (MKT)

Chairperson: Professor Nason

**301 Marketing Principles** (I and II, 3) Marketing from a managerial viewpoint with consumer emphasis. Product, pricing, channels, promotion. Marketing institutions, social welfare, and legal considerations. (Lec. 3) Staff

**311 Consumer Behavior** (I and II, 3) Analysis of review of perception, motivation, and communication behaviors of consumers as they relate to marketing with particular emphasis upon advertising and selling. (Lec. 3) Staff

**321 Social Issues in Marketing** (II, 3) Functioning of the market in an affluent society. Effect of marketing decisions by firms placed in the perspective of the collective interest of all participants in society. (Lec. 3) Pre: 301 or permission of instructor. Staff

**331 Fundamentals of Advertising** (II, 3) Condensed but comprehensive introduction to advertising. Basic for advanced study of specific phases of advertising. (Lec. 3) Pre: 301 or permission of instructor. Staff

**332 Advertising Copy and Layout** (I, 3) Practice in creation of effective advertising copy and layout for print and broadcast

media. (Lec. 2, Lab. 3) Pre: 331 or permission of instructor. Staff

**341 Analysis of Sales Methods** (II, 3) Fundamentals of the personal selling process with emphasis on sales theory, selling techniques, and the salesperson's role in the marketing process. (Lec. 3) Pre: 301. Staff

**371 Retail Store Management** (II, 3) Store organization, operation and control. (Lec. 3) Pre: 301. Staff

**405 Marketing Communications** (I, 2) The "communications mix" is explored in terms of a total promotional program. Characteristics of advertising media, sales promotion, public relations and publicity are surveyed. (Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor. Staff

**406 Product Management** (I, 2) Development of product policies and strategies in a competitive environment. Emphasis on organization of the product management function, planning and developing new products, adjusting product strategies, and deleting products. (Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor. Staff

**407 Channels of Distribution** (II, 2) Functions of distribution channels in society with emphasis on forces which shape their configuration and efficiency. Study of channel management with focus on channel development, control, policy, and practice. (Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor. Staff

**408 Pricing Decisions** (II, 2) Analysis of pricing problems and environmental factors influencing pricing decisions. Emphasis on behavioral dimensions of demand and the effects of cost, competition, product characteristics, and the firm's objectives. (Lec. 4 for one-half semester; independent work required) Pre: 301 or permission of instructor. Staff

**409 Marketing Policy and Problems** (II, 3) Summary course, emphasis on decision-making in all marketing areas and on use of the case method. (Lec. 3) Pre: 301 and senior standing. Staff

**415 Marketing Research** (II, 3) Nature, scope, and applications of marketing and advertising research. (Lec. 3) Pre: MGS 202, MKT 301. Staff

**416 Quantitative Marketing Management** (II, 3) Quantitative techniques and analytical models in marketing management. Selected models are explored emphasizing formulation and requirements for application to marketing problems. (Lec. 3) Pre: MGS 202 or equivalent, MKT 301. Staff

**433 Media Planning** (I, 3) Analysis of target markets leading to effective media planning and scheduling through use of major syndicated media services. (Lec. 3) Pre: 331 or graduate standing or permission of instructor. Staff

**434 Advertising Campaigns** (II, 3) Analysis and execution of advertising campaigns. Utilizes skills from other advertising and marketing studies. Field trips. (Lec. 3) Pre: 331, 415, or graduate standing, or permission of instructor. Staff

**442 Sales Management** (I, 3) Planning, organization, and control of sales operations. Emphasis is placed upon the sales manager's functions and problems. Cases. (Lec. 3) Pre: 301. Staff

**446 Industrial Marketing** (I, 3) Nature and analysis of industrial markets and their potential. Strategic planning, product policy, channel, price, and promotion mix decisions by the industrial marketer. Procurement and organization buying behavior. Cases. (Lec. 3) Pre: 301. Staff

**451 International Marketing** (II, 3) Planning and organizing for international marketing operations from a commercial point of view. Differences in market arrangements, legal, cultural, and economic factors in various countries. Strategy of product pricing, promotion, channels. (Lec. 3) Pre: 301. Staff

**491, 492 Directed Study** (I and II, 1-3 each) Independent study supervised by department faculty. Seminar meetings concerned with specific marketing topics. Pre: permission of department. Staff

**501 Marketing Theory and Practice** (I and II, 2)

## Mathematics (MTH)

Chairperson: Professor Suryanarayan

**107 Introduction to Finite Mathematics** (I and II, 3) Concepts and processes of modern mathematics concerned with logic, sets, and the theory of probability. Role of these concepts in the social and physical sciences of today. (Lec. 3) Not open to mathematics majors except for mathematics education students. Staff (M)

**108 Topics in Mathematics** (I and II, 3) Introduces the non-mathematics student to the spirit of mathematics and its applications. Presupposes no mathematical background beyond university admission requirements. Emphasis is on development of reasoning ability as well as manipulative techniques. (Lec. 3) Not open to mathematics majors except for mathematics education students. Staff (M)



**109 Algebra and Trigonometry (I and II, 3)** Real numbers, notation, and operations of algebra, introduction to elementary functions (polynomial, rational, exponential, and trigonometric). Designed for students who have only had one year of high school algebra. (Lec. 3) Not open to mathematics majors nor to students who have had calculus in high school or college, except by permission of department chairperson. Staff (M)

**111 Precalculus (I and II, 3)** Equations of first and second degree, systems of equations. Inequalities. Functions and graphs. Exponential, logarithmic, and trigonometric functions. Applications. Introduction to analytic geometry. Complex numbers. Designed for students who need to strengthen their background in mathematics below calculus. (Lec. 3) Not for credit for majors in mathematics. Staff (M)

**141 Introductory Calculus with Analytic Geometry (I and II, 3)** Integration of calculus and analytic geometry. Analytic geometry topics: graphing, straight line and conic sections; calculus: applications of the derivative in determining maxima and minima, rates of change, study of rectilinear motion. Antidifferentiation introduced early and used to find area, volume, length of arc, and surface area. (Lec. 3) It is recommended that students electing 141 have completed four units of high school mathematics including trigonometry. Staff (M)

**141L Introductory Calculus Problem Solving Laboratory (I and II, 1)** Problem-solving sessions to accompany 141. Topics include analytic geometry, derivatives, maxima and minima, rate of change, antidifferentiation, area, volume, arc length. Emphasis on application to physics and engineering problems. (Lab. 2) Pre: concurrent or prior registration in 141. Staff

**142 Intermediate Calculus with Analytic Geometry (I and II, 3)** Completes the integrated study of both plane analytic geometry and of differential and integral calculus. Applications related to trigonometric, logarithmic, and exponential functions, including polar coordinates and vector algebra. (Lec. 3) Pre: 141 or equivalent. Staff (M)

**143 Computer Laboratory in Calculus (I and II, 1)** Illustration of some concepts of elementary calculus using computer; use of computer in some applications of calculus. Students will write simple programs. No previous computer or programming experience required. (Lab. 2) Pre: prior or concurrent registration in 141. Staff

**215 Introduction to Linear Algebra (I, 3)** Detailed study of finite dimensional vector spaces, linear transformations, matrices, determinants and systems of linear equations. (Lec. 3) Pre: 142 or equivalent. Staff

**217 Computer Laboratory in Linear Algebra (I and II, 1)** Illustration of some concepts of linear algebra using computer; use of computer in some applications of linear algebra. Students will do programming. No previous computer or programming experience required. (Lab. 2) Pre: prior or concurrent registration in 215. Staff

**243 Calculus and Analytic Geometry of Several Variables (I and II, 3)** Applications of analytic geometry and calculus to space of three dimensions, including multiple integration and partial differentiation. It also includes infinite series. (Lec. 3) Pre: 142. Staff

**244 Differential Equations (I and II, 3)** Classification and solution of differential equations involving one independent variable. Applications to all the physical sciences. Basic for further study in applied mathematics and for advanced work in physics and engineering. (Lec. 3) Pre: 243. Staff

**316 Algebra (II, 3)** Theory and structure of groups. Topics from ring theory, principal ideal domains, unique factorization domains, polynomial rings, field extensions, and Galois theory. (Lec. 3) Pre: 215. Staff

**322 Concepts of Geometry (II, 3)** Survey of geometrical systems including non-Euclidean, affine, and projective spaces and finite geometries. A modern view of Euclidean geometry using both synthetic and analytic methods. (Lec. 3) Pre: 141 or equivalent. Staff

**361 Mathematics Methods for Scientists and Engineers (I, 3)** Introduction to differential equations and difference equations including Laplace transform and Z-transform. Functions of several variables, Lagrange multipliers, calculus of variations. (Lec. 3) Pre: 243. Staff

**362 Advanced Engineering Mathematics I (II, 3)** Algebra of complex numbers, matrices, determinants, quadratic forms. Linear differential equations with constant coefficients. Partial differential equations. (Lec. 3) Not for major credit in mathematics. Pre: 243. Staff

**363 Advanced Engineering Mathematics II (I, 3)** Laplace and Fourier transforms. Analytic functions. Cauchy's theorem and integral formula. Power series in the complex domain. Laplace and Fourier inverse integrals. Introduction to probability. (Lec. 3) Not for major credit in mathematics. Pre: 362 or equivalent. Staff

**381 History of Mathematics (I, 3)** General survey course in development and philosophy of mathematics. Provides a cultural background and foundation for advanced study in various branches of the subject. (Lec. 3) Pre: 142 or equivalent. Staff

**382 Number Theory (II, 3)** Some of the arithmetic properties of the integers including number theoretic functions, congruences, diophantine equations,

quadratic residues and classically important problems. (Lec. 3) Pre: 141 or permission of instructor. Staff

**391 Special Problems (I and II, 1-3)** Advanced work, under the supervision of a member of the staff and arranged to suit the individual requirements of the student. Pre: permission of department. Staff

**418 Matrix Analysis (I, 3)** Canonical forms, functions of matrices, characteristic roots, applications to problems in physics and engineering. (Lec. 3) Pre: 215 or 362 or permission of instructor. Staff

**420 Topics in Foundations (I, 3)** Especially designed for teachers of mathematics. Basic topics of mathematics from an advanced viewpoint, selected from sets, logic, mathematical structures, number theory, geometry. Coordinated with EDC 520 for students taking both concurrently. (Lec. 3) Pre: 142 or permission of instructor. Staff

**425 Topology (I, 3)** Abstract topological spaces and continuous functions. Generalizations of some classical theorems of analysis. (Lec. 3) Pre: 243 or equivalent. Staff

**435 Introduction to Mathematical Analysis I (I, 3)** Sets and functions, real topology, continuity and uniform continuity, derivatives, the Riemann integral, improper integrals. Detailed proofs emphasized. (Lec. 3) Pre: 243. Staff

**436 Introduction to Mathematical Analysis II (II, 3)** Sequences and series of functions, implicit and inverse function theorems, topology of Euclidean space, transformation of multiple integrals. Detailed proofs emphasized. (Lec. 3) Pre: 435. Staff

**437, 438 Advanced Calculus and Application I, II (I and II, 3 each)** Sequences, limits, continuity, differentiability, Riemann integrals, functions of several variables, multiple integrals, space curves, line integrals, surface integrals, Green's theorem, Stokes' theorem, series, improper integrals, uniform convergence, Fourier series, Laplace transforms. Applications to physics and engineering emphasized. (Lec. 3) Pre: 243. Staff

**441 Introduction to Partial Differential Equations (I, 3)** One-dimensional wave equation. Linear second order partial differential equations in two variables. Separation of variables and Fourier series. Non-homogeneous boundary value problems. Green's functions. (Lec. 3) Pre: 244 or 361. Staff

**444 Ordinary Differential Equations (II, 3)** Introduction to fundamental theory of ordinary and functional-differential equations. Series and numerical methods. Topics from stability, periodic solutions, or boundary-

value problems. Applications to physics, engineering, biology. (Lec. 3) Pre: 244 or 361 or 362. Staff

**451 Introduction to Probability and Statistics (I and II, 3)** Theoretical basis and fundamental tools of probability and statistics. Probability spaces, properties of probability, distributions, expectations, some common distributions and elementary limit theorems. (Lec. 3) Pre: 243 or equivalent. Staff

**452 Mathematical Statistics (II, 3)** Continuation of 451 in the direction of statistics. Basic principles of statistical testing and estimation, linear regression and correlation. (Lec. 3) Pre: 451. Staff

**456 Probability (II, 3)** Continuation of 451 in the direction of probability theory. Further problems in probability theory and applications. Markov chains and other stochastic processes. Generating functions, integral transforms, and other advanced techniques. (Lec. 3) Pre: 451. Staff

**461 Methods of Applied Mathematics (I, 3)** Topics selected from vector analysis, elementary complex analysis, Fourier series, Laplace transforms, special functions, elementary partial differential equations. Emphasis on development of techniques rather than mathematical theory. (Lec. 3) Pre: 244 or 361 or 362. Staff

**462 Functions of a Complex Variable (II, 3)** First course in the theory of functions of a single complex variable, including analytic functions, power series, residues and poles, complex integration, conformal mapping and applications. (Lec. 3) Pre: 243 or equivalent. Staff

**471 Introduction to Numerical Analysis I (I, 3)** Interpolation, solution of nonlinear equations, numerical evaluation of integrals, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor. Staff

**472 Introduction to Numerical Analysis II (II, 3)** Numerical solution of ordinary differential equations, systems of linear equations, least squares, approximation, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor. Staff

**492 Special Problems (I and II, 1-3)** Advanced work, under the supervision of a member of the staff and arranged to suit the individual requirements of the student. Pre: permission of department. Staff

**513 Linear Algebra (I or II, 3)**

**515, 516 Algebra I, II (I and II, 3 each)**

**525 Topology I (I, 3)**

**535, 536 Measure Theory and Integration (I and II, 3 each)**

**545, 546 Ordinary Differential Equations I, II (I and II, 3 each)**

**550 Probability and Stochastic Processes (I, 3)**

**551 Mathematical Statistics (I, 3)**

**561 Advanced Applied Mathematics (II, 3)**

**562 Complex Function Theory (I, 3)**

**572 Numerical Analysis (II, 3)**

**591, 592 Special Problems (I and II, 1-3 each)**

## Mechanical Engineering and Applied Mechanics (MCE)

Chairperson: Professor T. J. Kim

**162 Statics (I and II, 3)** Newton's laws of force systems in equilibrium and their effects on particles, systems of particles, and rigid bodies. Both scalar and vector methods of analysis developed. (Lec. 3) Pre: MTH 141. Staff

**263 Dynamics (I and II, 3)** Kinematic and kinetic study of motion of particles, systems of particles, and rigid bodies, acted upon by unbalanced force systems, using both scalar and vector methods; development of methods of analysis based on the direct application of Newton's laws, work-energy and impulse-momentum principles. (Lec. 3) Pre: 162. Staff

**317, 318 Mechanical Engineering Experimentation I and II (I and II, 3 each)** An integrated laboratory sequence for the junior and senior years; static and dynamic characteristics of instruments, calibration, experimental error propagation, planning of experiments from dimensional and error considerations, and a broad range of laboratory experiments in mechanical engineering. Pre: CSC 201, CVE 220, MCE 341 or equivalent for 317; 317 for 318. Hagist and Shukla

**323 Kinematics (I, 3)** Analysis of mechanisms by analytical and related graphical methods; linkages, cams, gears, gear trains, differential mechanisms, escapements, computing, and miscellaneous mechanisms; vector methods including complex exponential representation of a vector in a plane. (Lec. 3) Pre: EGR 102, CSC 201, MCE 263. Datseris

**341 Fundamentals of Thermodynamics (I and II, 3)** Basic principles and laws of thermodynamics and their relation to pure substances, ideal gases, and real gases. Use of thermodynamic property tables. Development of concepts of reversibility and availability. Thermodynamic diagrams and processes. (Lec. 3) Pre: 263, MTH 243, credit or registration in PHY 341. Brown, DeLuise, Test, and Henderson

**342 Mechanical Engineering Thermodynamics (I and II, 3)** Continuation of 341 including mixtures of gases and vapors, topics of gas dynamics and chemical thermodynamics, applications of thermodynamics to power cycles and refrigeration processes. (Lec. 3) Pre: 341 and CSC 201. Brown, DeLuise, Test, and Wilson

**354 Fluid Mechanics (I and II, 3)** Physical properties of fluids, development of continuity, energy, and momentum concepts using vector methods; application to problems involving viscous and non-viscous fluids including boundary layer flows, flows in closed conduits and around immersed bodies. (Lec. 3) Pre: 263, CSC 201, and MTH 244 or 461. Dowdell, Hagist, Lessmann, and White

**366 Introduction to Systems Engineering (II, 3)** Systems analysis emphasizing control and vibration. Time and frequency domain techniques. State variables. Multidimensional and stochastic systems. Reliability. Interaction with economic, environmental, and human operator systems. (Lec. 3) Pre: 372, CSC 201, and MTH 244, or permission of instructor. Driels and Palm

**372 Engineering Analysis I (I, 3)** Application of advanced mathematical methods to solution of mechanical engineering problems with emphasis on the techniques of engineering analysis. (Lec. 3) Pre: CSC 201 and MTH 244, junior standing. Lessmann and Sadd

**373 Engineering Analysis II (II, 3)** Continuation of 372. (Lec. 3) Pre: 372. Lessmann and Sadd

**391, 392 Honors Work (I and II, 1-3 each)** Independent study under faculty supervision for honors students. Pre: admission to departmental honors program. Staff

**401 (or OCE 401) Introduction to Ocean Engineering Systems I (I, 3)** Basic ocean engineering principles with emphasis on mechanics, thermodynamics and fluid-flow applications. Motion and equilibrium under the action of ocean forces. Propulsion, structure, and corrosion aspects. (Lec. 3) Pre: 341 and 354, or permission of instructor. Not for graduate degree program credit. Kowalski

**402 (or OCE 402) Introduction to Ocean Engineering Systems II (II, 3)** Continuation of 401. Flow of fluids in ocean systems. Psychrometry and mass transfer in pressurized environments. Human response to pressure. Design aspects of diving systems. Integrated system studies. (Lec. 3) Pre: 401. Not for graduate degree program credit. White

**406 Atmospheric Physics I**  
See Physics 406.

**407 Atmospheric Physics II**  
See Physics 407.

**410 (or OCE 410) Basic Ocean Measurements (I or II, 3)** Four or five basic ocean measuring exercises: current and tide, dissolved oxygen, wave frequency spectra, soil characteristics from cores, water depth, and bottom profiles. (Lec. 1, Lab. 6) Pre: senior standing in engineering or permission of instructor. Not for graduate degree program credit. Middleton

**423 Design of Machine Elements (I, 3)**

Design and analysis of machinery involving application of principles of strength of materials. General problem of determining adequacy of design; factor of safety, stress concentration, fatigue, creep temperature stress. Mechanical power transmission devices, gears, springs, shafts, fasteners, ball bearing reliability. (Lec. 3) Pre: 323, 372, and CVE 220. Driels and Nash

**424 Dynamics of Machines (I, 3)** The forces in machinery, including linkages, intermittent motions, trains of mechanism, static, inertia and combined forces, balancing, critical speeds and gyroscopic effects. (Lec. 3) Pre: 323, MTH 244. Datsieris

**425 Lubrication and Bearings (I, 3)** Theory of hydrodynamic lubrication and bearing design, chemical aspects of lubricants and additives, bearing metals and their surface properties, friction and wear. (Lec. 3) Pre: 354. Ghonem

**426 Advanced Mechanics of Materials (I, 3)** Introduction to continuum mechanics: stress, strain and deformation, constitutive equations. Theories of failure. Shear center and unsymmetrical bending of beam. Curved beams. Energy method. Torsion. Pre: CVE 220. Ghonem and Shukla

**427 (or ZOO 427) Modeling and Analysis of Dynamic Systems (I, 3)** Modeling and analysis of complex systems with emphasis on feedback characteristics, modeling techniques and computer simulations. Examples from ecological, biological, engineering, and economic systems. (Lec. 3) Pre: MTH 142 and elementary computer programming. Palm

**428 Mechanical Control Systems (II, 3)** Analysis of mechanical, electromechanical, hydraulic, pneumatic, and thermal control systems; transient and frequency response of linear systems; Laplace transformation applied to automatic control systems, transfer functions, system stability; computer applications. (Lec. 3) Pre: 263 or equivalent and MTH 244. Palm and Driels

**429 Comprehensive Design (II, 3)** Creative design of engineering systems including possible socioeconomic and ecological considerations. Original design and analysis projects. Advanced topics in design: reliability and probability considerations, decision theory, optimum design, case studies of recent innovations. (Lec. 3) Pre: 423. Driels and Nash

**430 Computer-Aided Design (I or II, 3)** Constructive solid geometric modeling of 3-D objects, simulation of kinematics and dynamics of mechanisms. Mechanism design for various kinematic and dynamic requirements. Stress analysis and design of mechanical devices. (Lec. 3) Pre: CSC 201, MCE 323, CVE 220. Datsieris and Chase

**431 Computer Control of Mechanical Systems (II, 3)** Integrated study of hardware and software aspects of microcomputer-based systems with emphasis on interfacing to external hardware for on-line measurement, data acquisition, and control of mechanical systems. Pre: CSC 201 and MCE 366. Driels

**432 Alternate Energy Systems (I, 3)** Topics include energy availability and analysis of conversion systems such as MHD, fuel cells, wind and ocean power, and solar-generated electricity. (Lec. 3) Pre: 342, 354, PHY 341. Lessmann and Dowdell

**434 Thermal Environmental Engineering (II, 3)** Application of the principles of thermodynamics and heat transfer to environmental problems. Topics will include thermal control of living spaces, solar heating and cooling, heat pumps, minimum energy consumption. (Lec. 3) Pre: 342, 354, 448. Test, Lessman, and Henderson

**438 Internal Combustion Engines (I, 3)** Principles, design and operation of internal combustion engines, including cycles, combustion, fuels, detonation, carburetion, cooling, supercharging, ignition, friction, and lubrication. Gasoline and diesel, two- and four-stroke cycles, and performance of various engines including the Wankel rotary. (Lec. 3) Pre: 342. Brown

**439 Applied Energy Conversion (II, 3)** Modern power systems including steam and gas turbines, nuclear power stations, fuel cells, and thermionic and thermoelectric devices. (Lec. 3) Pre: 342 and 448 or permission of instructor. Brown and Dowdell

**448 Heat and Mass Transfer (I, 3)** Transfer of heat by conduction, convection, and radiation in steady and unsteady states. Theory and application of dimensional analysis; heat and mass transfer in equipment such as heat exchangers and steam condensers. (Lec. 3) Pre: 341 and 372. White, Faghri, and Henderson

**455 Advanced Fluid Mechanics (I, 3)** Continuation of 354. Selected topics in advanced fluid mechanics including potential flows, compressible flow, fluid machinery, and electric and magnetic field effects. (Lec. 3) Pre: 354. Dowdell, Hagist, Lessmann and White

**464 Vibrations (II, 3)** Elementary theory of mechanical vibrations, including the one-degree-of-freedom system, multimass systems, vibration isolation, torsional vibration, beam vibration, critical speeds, and vibration instruments. (Lec. 3) Pre: 366 or permission of instructor. Driels

**465 Experimental Stress Analysis (I, 3)** Theory and application of various stress analysis techniques like strain gages, brittle

coatings, two-dimensional photoelasticity, etc.; significance of stress analysis in the engineering design of load resisting members. (Lec. 2, Lab. 3) Pre: CVE 220, PHY 214. Shukla

**466 Introduction to Finite Element Method (II, 3)** Application of the finite element method to problems in mechanical engineering including plane elasticity, heat transfer, and fluid mechanics. Basic concepts, matrix formulation, interpolation functions, basic element types, and implementation to problem solution. Pre: CVE 220 and MCE 373. White and Kim

**491, 492 Special Problems (I and II, 1-6 each)** Advanced work, under the supervision of a staff member, arranged to suit the individual requirements of the student. (Lec. and Lab. according to nature of problem) Credits not to exceed total of 12. Pre: permission of department. Staff

**503 (or ELE 503) Linear Control Theory (I or II, 3)**

**504 (or ELE 504) Optimal Control Theory (II, 3)**

**505 Optimization in Mechanical Engineering Design (I or II, 3)**

**521 Reliability Analysis and Prediction (II, 3)**

**523 Advanced Kinematic Analysis (I, 3)**

**524 Advanced Kinematic Synthesis (I, 3)**

**540 (or OCE 540) Environmental Control in Ocean Engineering (II, 3)**

**541, 542 Advanced Thermodynamics I and II (I and II, 3 each)**

**545 Heat Transfer (I, 3)**

**546 Convection Heat Transfer (II, 3)**

**550 Theory of Continuous Media (I, 3)**

**551 Fluid Mechanics I (I, 3)**

**552 Fluid Mechanics II (II, 3)**

**553 Fluid Mechanics III (I, 3)**

**561 Computational Methods in Mechanical Engineering (II, 3)**

**563 Advanced Dynamics (I and II, 3)**

**564 Advanced Vibrations (I, 3)**

**565 Wave Motion and Vibration of Continuous Media (II, 3)**

**571 Theory of Elasticity I (I, 3)**

**572 Theory of Elasticity II (II, 3)**

**573 Theory of Plates (I and II, 3)**

**575 Elastic Stability (I or II, 3)**

**576 Fracture Mechanics (II, 3)**

**582 (or CSC 582 or ELE 582) Robotics (I or II, 3)**

## Medical Technology (MTC)

Coordinator: G. Paquette

**102 Introduction to Medical Technology (II, 1)** An orientation to medical technology including specialty areas of medical laboratory sciences, professional organizations, credentialing, the team concept and professionalism. (Lec. 1) S/U credit. Paquette



**301 Medical Technology Seminar (I, 1)**

Lectures, discussions, and demonstrations to relate college coursework to the hospital laboratory (Lec. 1) Pre: junior standing and permission of instructor. Paquette

The clinical courses in Medical Technology require senior standing and are available only to students who have been accepted into an affiliated Hospital School of Medical Technology.

**401 Clinical Microbiology (I, 8)** The relationship of bacteria and bacterial diseases of man with emphasis on the application of procedures to medical diagnosis. Fungi, viruses, the rickettsias, and human parasites are also studied. Hospital Staff

**402 Clinical Chemistry (II, 8)** The chemistry of body constituents and their relationship to diagnosis of human disease. Principles and methods of analysis are emphasized. Hospital Staff

**403 Immunohematology (I, 4)** Instruction in drawing and processing blood and in ascertaining compatibility. Donor-recipient blood and tissue reactions are studied in detail. Hospital Staff

**404 Hematology (II, 6)** Morphology of the blood and blood-forming organs and the study of abnormalities associated with disease. The dynamics and diagnostic tests of hemostasis are also discussed. Hospital Staff

**405 Pathophysiology (I, 2)** An introduction to pathology. The correlation between pathological processes and clinical symptoms and the course of disease is studied. Hospital Staff

**406 Clinical Immunology (II, 2)** Formation, structure and action of antigens and antibodies. Methods of immunization. The laboratory emphasizes serological procedures in the diagnosis of disease. Hospital Staff

**407 Clinical Microscopy (I, 2)** Lectures and laboratory practice in the analyses of body fluids. Hospital Staff

**Medicinal Chemistry (MCH)**

Chairperson: Professor L.R. Worthen

**342 Pharmaceutical Analysis (I and II, 3)** Principles and techniques of official and non-official procedures for the quantitative assay and qualitative control of drugs and pharmaceutical necessities. (Lec. 2, Lab. 3) Pre: third-year standing and permission of department. Smith

**344 (or PCL 344) Principles of Medicinal Chemistry and Pharmacology (II, 3)** Chemical, physico-chemical and biomole-

cular principles affecting drug delivery and action including biotransformation, isosteres, as well as radiopharmaceutical principles. Pre: third-year standing or permission of instructor. Smith, Abushanab, and DeFeo

**443, 444 Organic Medicinal Chemistry (I and II, 3 each)** Selected compounds of medicinal and pharmaceutical importance. Uses, syntheses, incompatibilities, correlation of physical properties, structures, and biological activity. (Lec. 3) Pre: CHM 228, MCH 342, MCH (or PCL) 344, and/or permission of instructor. Abushanab, Panzica, and Turcotte

**497, 498 Special Problems (I and II, 1-5 each)** Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. 3-15) Pre: permission of department. Staff

**501 Radiopharmaceuticals (I, 3)**

**526 (or FSN 526) Lipid Chemistry (I, 3)**

**533 Advanced Drug Assay (I and II, 2-4)**

**548 (or PCG 548) Physical Methods of Identification (II, 3)**

**549 Synthesis (I and II, 3)**

**Microbiology (MIC)**

Chairperson: Professor N.P. Wood

**201 Introductory Medical Microbiology (I and II, 4)** Required of all students in Nursing, Dental Hygiene, and Pharmacy. Lecture and laboratory designed to illustrate microbiological principles and techniques. For students in allied health professions. (Lec. 2, Lab 4) Pre: 1 semester of biology and 1 year of chemistry. Not open to students who have had 211. Staff

**211 Introductory Microbiology (I and II, 4)** Introduction to microorganisms. Morphology, structure, metabolism, genetics, growth, populations in natural habitats, and their effects on the environment. For biological sciences majors. (Lec. 2, Lab. 4) Pre: 2 semesters of biology, 1 semester of organic chemistry (can be taken concurrently). Not open to students who have had 201. Staff

**361 Soil Microbiology (II, 4)** Living microbial populations, microenvironments, decomposition, and utilization of organic matters, mineralization, immobilization and microbial interactions. Isolation, enumeration, and estimation of microbial activity. Emphasis on microbial aspects of soil processes. (Lec. 3, Lab. 3) Pre: 201 or 211; one semester of organic chemistry. In alternate years, next offered 1984-85. Staff

**401 Quantitative Cell Culture**  
See Biochemistry and Biophysics 401.

**403 Introduction to Electron Microscopy**  
See Biochemistry and Biophysics 403.

**405 (or BCP 405) Electron Microscopy Laboratory (I, 2)** Introduction to the practical aspects of electron microscopy. Emphasis on acquisition of the following skills: tissue preparation, ultra-microtomy, operations of the electron microscope, and darkroom procedures. (Lab. 6) Pre: prior or concurrent enrollment in 403 and permission of instructor. Hufnagel

**410 (or ZOO 410) Introduction to Protistology (II, 3)** Taxonomic survey of all classes of protozoa, followed by descriptive biology of the ciliated protozoa. Topics include evolution, ultra-structure, physiology, genetics, development, ecology. Emphasis on recent advances. (Lec. 2, Lab. 2) Pre: 4 courses in biological science; junior standing or permission of instructor. In alternate years, next offered 1985-86. Hufnagel

**411 Advanced Bacteriology (I, 4)** Advanced treatment of growth, cytology, physiology, genetics, and classification of bacteria. (Lec. 2, Lab. 6) Pre: 201, BCP 311 or permission of instructor. Cabelli

**412 Food Microbiology (II, 3)** Analysis of water and milk; examination of dairy and other food products. (Lec. 2, Lab. 4) Pre: 201 or 211 and 1 semester organic chemistry (may be taken concurrently). D. Nelson

**422 Industrial Microbiology**  
See Plant Pathology-Entomology 422.

**432 Pathogenic Bacteriology (II, 3)** The more important microbial diseases, their etiology, transmission, diagnosis and control. Laboratory, emphasis on methods of diagnosis. (Lec. 2, Lab. 3) Pre: 201 or 211 or 1 semester of organic chemistry. Sperry

**453 Cell Biology**  
See Botany 453.

**481, 482 Clinical Practicum (I and II, 2)** Supervised practical experience and training in clinical microbiology conducted at URI Health Services. (Lec. 1, Lab. 3) Pre: 432 and approval of department and instructor. Open only to seniors. Health Services Staff

**491, 492 Research in Microbiology (I and II, 1-6 each)** Special problems in microbiology. Student required to outline a problem, carry on experimental work and present conclusions in a report. (Lab. 2 to 12) Open only to seniors in the microbiology curriculum. Staff

**495, 496 Seminar in Microbiology (I and II, 1 each)** Preparation and presentation of papers on selected subject in microbiology. (Lec. 1) Pre: permission of department. S/U credit. Staff

**510 (or ZOO 510) Cell and Developmental Biology of the Motile Protista (II, 2)**



- 521 (or BOT 521 or ZOO 521) Recent Advances in Cell Biology (I, 1)**  
**533 Immunity and Serology (I, 3)**  
**552 Microbial Genetics (II, 3)**  
**561 Recent Advances in Molecular Cloning (I, 1)**  
**576 (or OCG 576) Marine Microbiology (I, 3)**  
**593, 594 The Literature of Bacteriology (I and II, 1 each)**

Note: For Virology, see Aquacultural Science and Pathology; for Mycology, see Botany.

## Military Science (MSC) (Army ROTC)

Chairperson: Professor McNamara

- 100 Introduction to Leadership (I, 1)**  
 Develops leadership ability by placing students in challenging situations which require quick judgments, decisions, and teamwork. Includes leadership theory, rappelling, water survival, and cold weather operations. (Lab. 2) Staff
- 105 Beginner Weight Training and Conditioning**  
 See Physical Education 105W.
- 107 (105) Orienteering (II, 1)** Introduction to orienteering, to include map reading, compass use, and cross-country land navigation. Students will have the opportunity to compete in intercollegiate meets. (Lab. 3) Staff
- 170 History of Modern Warfare (I, 3)** Study of warfare with emphasis on the period since the introduction of gunpowder. Influence of social systems, economics, leaders, and the major battles on warfare will be explored. (Lec. 3) Sanfason and Litzer
- 180 The American Military and Society (II, 3)** A look at how society and the military interact. Examination of the historical development of the military, the military industrial complex, military justice, race relations, drug abuse. (Lec. 3) Sanfason and Litzer
- 205 Intermediate Weight Training and Conditioning**  
 See Physical Education 205W.
- 260 Comparative Military Systems (II, 3)** In-depth look at the military systems of the U.S., U.S.S.R., and the People's Republic of China. Exploration of manpower sources, training, equipment, education, social position, mission, and strategy. (Lec. 3) Gebhard
- 270 Studies in Military Leadership (I, 3)**  
 Analysis of historical and contemporary case studies in military leadership. Evaluation of basic principles influencing these cases. (Lec. 3) Gebhard

**310, 320 Leadership and Management (I and II, 2 each)** Advanced courses: application of the principles of war, small unit tactics, leadership development, planning and execution of tactical problems. (Lec. 2, Lab. 2) Pre: permission of department and successful completion of basic courses, or completion of basic camp or equivalent; for 320, 310. Hague

**330, 340 Organizational Management and Law (I and II, 3 each)** Advanced courses; military law, obligations and responsibilities of an officer, Army readiness program, administrative management, world change and military implications, logistics, the military team, internal defense and development. (Lec. 3, Lab. 2) Pre: permission of department; for 330, 320; for 340, 310. McNamara

## Music (MUS)

Chairperson: Professor Heard

- 050 Performance Preparatory (I and II, 0)**  
 Class or private instruction. Select appropriate letter and voice or instrument from the list under 251 below and add to course number, as 050E Violin. May be repeated for a second semester if work of the first is satisfactory. (Lec. 1) Staff
- 101 Introduction to Music (I and II, 3)**  
 Fosters a better understanding and appreciation of the world's great music. Consideration of musical styles, techniques and forms from the listener's standpoint. (Lec. 3) Ceo and Wry (A)
- 105 Folk Music (I, 3)** Folk songs, dances, and instruments of the world with emphasis upon American sources. (Lec. 3) Staff
- 106 History of Jazz (I and II, 3)** The nature and origin of jazz and its development as an American folk idiom: European and African heritages, blues, ragtime, dixieland, boogie-woogie, swing, bop, cool, funky, gospel, jazz-rock, free-form, and progressive. Pollart (A)
- 111 Basic Musicianship (I and II, 3)** Use of folk, classical, and popular music to learn essentials of music reading and music theory. Not open to music majors. (Lec. 3) Fuchs and Wry (A)
- 113, 114 Diatonic Harmony and Ear Training (I and II, 4 each)** 113: Rhythmic, melodic, and harmonic elements of music. Scales, intervals, and the chord structure. Sight-singing, rhythmic articulation, and melodic dictation. Part-writing, analysis, keyboard work, and harmonic dictation involving primary triads. (Lec. 3, Lab 2) Pre: concurrent or previous keyboard experience. 114: Continuation, covering all diatonic triads, dominant and supertonic seventh

chords, and modulation to closely related keys. (Lec. 3, Lab 2) Pre: 113. Dempsey and Rankin

**117 Applied Composition (I and II, 1)**  
 Private study in composition for students interested in original work in contemporary idioms. Emphasis on mastery of the basic craft and individual creative expression. May be repeated once for credit. (Lec. 1) Pre: determined by audition. Gibbs

**169 Percussion Instruments Class (II, 1)**  
 Basic principles in performance and pedagogy of percussion instruments. (Lab. 2) Open only to students in the music education curriculum. Pollart

**170 Guitar for the Classroom Music Teacher (I, 1)** Development of the basic principles and pedagogy for use of guitar in the music classroom. (Lec. 1) Registration limited to music education majors. Fraioli

**171, 172 Piano Class (I and II, 1 each)**  
 Development of basic techniques and musicianship for effective use of the piano in music classrooms. To earn credit in 172, each student must pass the piano proficiency examination. (Lab. 2) Pre: 171 for 172. Open only to students majoring in music. Fuchs and Wry

**173, 174 Voice Class (I and II, 1 each)** Basic principles and pedagogy of singing, physiology, breathing, tone production, diction. (Lab. 2) Pre: 173 for 174. Open only to students in the music education curriculum. Langdon

**175, 176 String Instruments (I and II, 1 each)** Basic principles in performance and pedagogy of violin or viola and violoncello or bass viol. (Lab. 2) Pre: 175 for 176. Open only to students in the music education curriculum. Dempsey and Chapple

**177, 178 Woodwind Instruments Class (I and II, 1 each)** Basic principles in performance and pedagogy of woodwind instruments, with emphasis on clarinet and flute. (Lab. 2) Pre: 177 for 178. Open only to students in the music education curriculum. Giebler

**179, 180 Brass Instruments Class (I and II, 1 each)** Basic principles in performance and pedagogy of trumpet, French horn, baritone, trombone, and tuba. (Lab. 2) Pre: 179 for 180. Open only to students in the music education curriculum. Staff

**181, 182 Intermediate Piano Class (I and II, 1 each)** Further development of basic keyboard performance. Improvised accompaniments to folk songs. Sight transposition. Some score reading. Further development of reading skills using materials on the level of Bartok: Mikrokosmos, Books 2 and 3, and Clementi: Sonatinas, Op. 36. Registrants must also take any part of the piano

proficiency examination not previously passed. (Lab. 2) Open only to students in the music education curriculum. Pre: 172 for 181; 181 for 182. Fuchs and Wry

**208 Jazz Improvisation I (I, 3)** An intensive study and practice of the formal elements of jazz improvisations. (Lec. 1, Lab 4) Pre: 114 and acceptance into a 200-level performance course. Staff

**209 Jazz Improvisation II (II, 3)** Intensive study and performance of improvisation in jazz music with attention to blues, ballad, jazz-rock, Latin jazz and free jazz styles. (Lec. 1, Lab. 4) Pre: 208 or permission of instructor. Staff

**215, 216 Advanced Harmony and Ear Training (I and II, 3 each)** 215: Advanced rhythmic, melodic, and harmonic practice approached through sight-singing, dictation, analysis, keyboard work, and part-writing including original work. Covers all seventh chords, chromatic alteration, chromatic progression, and foreign modulation. (Lec. 2, Lab. 2) Pre: 114 or equivalent. 216: Continuation, covering ninth, eleventh, and thirteenth chords; melodic elaboration. Introduction to contrapuntal textures and contemporary idioms. (Lec. 2, Lab. 2) Pre: 215. Gibbs

**221, 222 History of Music (I and II, 3 each)** 221: Development of music primarily in Western culture from Ancient times through the Middle Ages, Renaissance and the Baroque periods. 222: Continuation to include the Rococo, Classical, Romantic, and Modern eras. (Lec. 3) Pre: 101 or placement exam. Giebler

**241 Performance in Piano for Theory-Composition Majors (I and II, 2)** Reading scores at the piano and using the piano as a tool for composing or theoretical study and teaching. Private instruction. Four semesters. (Studio 40 min.) Pre: 182 or equivalent. Staff

**242 Performance in Piano for Voice Majors (I and II, 2)** Reading as an adjunct skill for teaching voice, conducting choirs, or familiarizing oneself with the sound of accompaniment. Private instruction. Four semesters. Not open to students with credit for 251B (Studio 40 min.) Pre: 182 or equivalent. Staff

**250 Recital Laboratory (I and II, 0)** Performance in and attendance at student afternoon recitals. Study of repertory and techniques of concert presentation including lectures by faculty and visiting artists. May be repeated. Staff

**251 Performance as Minor or Elective (I and II, 2)** Lower division. One private 40-minute lesson each week. Two levels; one per year, as prescribed in syllabi. Recital performances as required by department and instructor.

(Studio 40 min.) May be repeated for credit. Pre: audition. Requirements for each instrument available from department. Staff

Select area of instruction from the following and add to course number as 251B, Piano:

A Voice	I Viola d'amore	R Trombone
B Piano	J Flute	S Baritone
C Organ	K Oboe	Horn
D Harpsichord	L Clarinet	T Tuba
E Violin	M Bassoon	U Percussion
F Viola	N Saxophone	V Guitar
G Violoncello	P Trumpet	W Harp
H Bass Viol	Q French Horn	Y Recorder

**261 Performance Major (I and II, 3)** Lower division. One private 60-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. (Studio 60 min.) May be repeated. Pre: audition. Requirements for each instrument available from department. See under 251 for areas of study. Staff

**290 (391) University Symphony Orchestra (I and II, 1)** Audition required. (Lec. 3) May be repeated. Ceo

**291 University Marching Band (I, 2)** Preparation of music, maneuvers, and shows for homes and away football games. (Lab. 2) Only one of the two credits for this course applies toward the bachelor of music degree requirements. May be repeated. Pollart

**292 Concert Band (II, 1)** Study and performance of concert band music. Open to all students by audition. (Lab. 2) Pre: audition. May be repeated. Pollart

**293 University Chorus (I and II, 1)** Audition required. (Lec. 3) May be repeated. Kent

**294 (394) Symphonic Wind Ensemble (II, 1)** Audition required. (Lec. 3) May be repeated. Pollart

**295 (395) Concert Choir (I and II, 1)** Audition required. (Lec. 3) May be repeated. Kent

**296 (396) Jazz and Studio Ensemble (I and II, 1)** Performance and study of jazz and studio music as related to professional experiences. (Lab 3) Pre: audition. Motycka

**297 (397) University Chamber Orchestra (I and II, 1)** An ensemble which offers the study and performance of standard and modern repertoire for the smaller orchestral group. Literature will be selected from the Baroque, Rococo, Classic and contemporary periods. (Lec. 1) Pre: all prospective members will be selected by audition. String players must be members of the University Orchestra, while others may qualify with permission of the conductor. Music majors will be given preference for admission. May be repeated. Ceo

**299 (399) Chamber Music Ensembles (I and II, 1)** Chamber music ensembles are designated as A Keyboard Ensemble, B String Ensemble,

C Woodwind Ensemble, D Brass Ensemble, E Percussion Ensemble, G Madrigal Singers, H Guitar Ensemble, J Saxophone Ensemble, M Jazz Combo. Select appropriate letter and small ensemble from list and add to course number, as 399B String Ensemble. Other ensemble combinations may be added. Small instrumental ensembles are normally restricted to one performer per part. Audition required. (Lec. 2) May be repeated. Staff

**306 Composing and Arranging for Jazz Ensemble I (I, 3)** Modern and traditional jazz arranging and compositional techniques, with emphasis on solo and concerted ensemble writing, voicing techniques and mechanics of line writing; unique composing styles of recognized jazz composers. (Lec. 3) Pre: 215. Staff

**307 Composing and Arranging for Jazz Ensemble II (II, 3)** Advanced linear and voicing techniques. Arranging and orchestrating standard and original material for small and large ensembles, with intensive score analysis. Pre: 306. Staff

**311, 312 Conducting (I and II, 2 each)** 311: Choral conducting. Special techniques for direction and rehearsal of choral groups. Problems of tone, diction and balance; organization of school, church, community and professional groups. Analysis of major choral works from conductor's standpoint. (Lec. 2) Pre: previous or concurrent registration in 215. Kent. 312: Instrumental conducting. Problems of conductor; score reading, interpretation, techniques of rehearsal and direction. (Lec. 2) Pre: previous or concurrent registration in 215. Ceo

**317 Form and Analysis (I, 3)** Critical study of musical structure. Works of various composers are analyzed with reference to motive and phrase as generative elements in design. (Lec. 3) Pre: 216. Giebler

**321 Orchestration (II, 3)** Range, timbre, transpositions, and other characteristics of the instruments of the orchestra, singly and in combination. Exercises in writing for choirs of the orchestra and for full orchestra. Setting of one of small homophonic forms of full orchestra required. (Lec. 3) Pre: 317. Gibbs

**329 (or EDC 329) Music for the Elementary School Teacher (I and II, 3)** Fundamentals of music and methods employed in teaching music and making it a more meaningful and integral part of the curriculum in the elementary school. (Lec. 3) Open only to elementary GTE students. Wry

**339 Vocal Methods and Materials (I, 3)** Organization of the vocal music program in the elementary and secondary school with emphasis on method and introduction to material. (Lec. 3) Pre: junior standing in music. Wry

**340 Instrumental Methods and Materials (II, 3)** Organization of instrumental music

program in the elementary and secondary school with emphasis on method and introduction of materials. (Lec. 3) Pre: junior standing in music. Pollart

**345, 346 Honors Project** (I and II, 1-3 each) Independent study under faculty supervision for honors students. Pre: departmental approval of admission to honors program and acceptance of project by a member of the staff. Staff

**350 Jazz Curriculum, Methods and Materials** (II, 2) Intensive study of extant jazz-centered curriculum and methodology models and available materials for classroom and rehearsal use. (Lec. 2) Pre: 339 or 340 or teaching experience. Motycka

**390 Piano Accompanying** (I and II, 1) Development of sightreading skills. Preparation and performance of accompaniments. (Lec. 1) Pre: permission of piano faculty. May be repeated. Fuchs or Rankin

**407 The Symphony** (II, 3) Survey of the development of the symphony from its beginnings in the mid-eighteenth century to the present. Includes a study of the evolution of the orchestra and the sonata form and considers cultural influences exerted upon the composers. (Lec. 3) Pre: 222. In alternate years, next offered spring 1985. Giebler

**408 The Opera** (II, 3) History of the opera from its beginning in Florence at the turn of the seventeenth century to the present. (Lec. 3) Pre: 221, 222. In alternate years, next offered spring 1986. Gibbs

**418 Composition** (II, 3) Original work in small binary, ternary, variation, and sonatina forms for various instrumental and vocal groups. (Lec. 3) Pre: prior or concurrent registration in 317. In alternate years, next offered spring 1985. Gibbs

**419 Composition** (I, 2) Continuation of 418, stressing original composition in larger forms and study of twentieth-century techniques. (Lec. 2) Pre: 418. Gibbs

**420 Counterpoint** (II, 3) Systematic study of motive manipulation with reference to traditional contrapuntal devices. Emphasis on harmonic counterpoint of late Baroque, more recent practices considered. Creative work in canon, invention, fugue, and chorale-prelude. (Lec. 3) Pre: prior or concurrent registration in 317. In alternate years, next offered spring 1986. Giebler

**422 Advanced Orchestration** (II, 2) Continuation of 321, emphasizing score reading and orchestration styles. Transcription for orchestra of a major keyboard work required as a semester project. (Lec. 2) Pre: 321. Gibbs

**423 Sixteenth-Century Counterpoint** (II, 3) Modal polyphony based on the style of Palestrina and his contemporaries, covering cantus firmus techniques, imitation and

various other contrapuntal devices in textures from two to four or more voices. (Lec. 3) Pre: 216. In alternate years, next offered spring 1985. Giebler

**430 The Renaissance Period** (I, 3) Music of the period (ca. 1400-1630) from Dunstable and Dufay to Palestrina and Monteverdi, covering the polyphonic mass, motet, chanson, madrigal, lied, ricercar, canzona, dance, variation, and related genres. (Lec. 3) Pre: 221 and 222. In alternate years, next offered fall 1984. Giebler

**431 The Baroque Era** (I, 3) Music of the so-called thorough-bass period (ca. 1600-1750) includes the emergence of opera and oratorio, autonomous instrumental music and the concerto style, culminating in works of Bach and Handel. (Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1985. Giebler

**432 The Classic Era** (II, 3) Music of the period (ca. 1725-1815) beginning with the decorative gallant style of the Rococo composers and culminating in the expressive architectonic textures in the works of Haydn, Mozart and early Beethoven. (Lec. 3) Pre: 221, 222. In alternate years, next offered spring 1986. Giebler

**433 The Romantic Era** (I, 3) Music of the nineteenth century within the context of the Romantic movement (1815-1875). Major composers and their works in various media are considered with respect to their historical significance. (Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1985. Gibbs

**434 The Modern Era** (I, 3) Music of the twentieth century with emphasis on changing aesthetics as revealed through the analysis of selected composition. (Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1984. Gibbs

**438 Topics in Elementary School Music** (II, 3) Open-ended course examining significant materials, approaches, and current trends. Topics cover such areas as aesthetic education, process of musical development, eurhythmics, Orff and Kodaly or an overview. May be repeated with credit with change of topic. Pre: MUS (EDC) 329, 339 or equivalent. In alternate years, next offered spring 1985. Wry

**441 Special Projects** (I and II, 3) Advanced work in research or of a creative nature in the field of history, literature, theory, composition, and education. Advisory basis; permission of department and instructor required for registration. Pre: completion of the most advanced undergraduate course in the field. May be repeated once. Staff

**446 Teaching General Music** (II, 2) Examination of philosophies, objectives, activities/experiences, and evaluative devices relating to general music study in the junior high school/middle school setting. (Lec. 2) Pre: 339, 340, or teaching experience. Motycka

**451 Performance as Minor or Elective** (I and II, 2) Upper division. One private 40-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. (Studio 40 min.) May be repeated for credit. Pre: completion of performance minor lower division and permission of department. See under 251 for areas of study. Staff

**452 Upper Level Performance as Minor** (I and II, 2) Extends lesson time in 451 to 60 minutes. Pre: four prior credits in 451, concurrent registration in 451, and permission of instructor. Staff

**455 Senior Recital** (I or II, 0) Performance of a public program of at least 20 minutes performing time after faculty examination. Pre: concurrent registration in 451 and four or more prior credits of 451. Staff

**461 Performance as Major** (I and II, 4) Upper division. One private 60-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. (Studio 60 min.) Pre: completion of performance major lower division and permission of department. See under 251 for areas of study. Staff

**465 Senior Recital for Performance Majors** (I or II, 0) Performance of a public program of at least 50 minutes performing time after faculty examination. Pre: concurrent registration in 461 and eight or more prior credits in 461. Staff

**481, 482 Piano Literature and Pedagogy** (I and II, 2 each) 481: Intensive study of keyboard literature from 1700 to 1825. Analysis of styles and forms and their implications for performance. Teaching methods and materials. (Lec. 2) Pre: 216, 222, and 251B or 261B or permission of department. 482: Continuation involving literature from the nineteenth century to the present. (Lec. 2) Pre: same as for 481. In alternate years, next offered 1985-86. Fuchs

**483, 484 Vocal Literature and Pedagogy** (I and II, 2 each) 483: Concentrated study of vocal literature of the Baroque and Classic era. Analysis of styles, forms and texts and their influences in performance. Diction, teaching methods and materials. (Lec. 2) 484: Continuation encompassing literature from the nineteenth century to the present. (Lec. 2) Pre: for 483 and 484: 216, 222, 251A or 261A or permission of department. In alternate years, next offered 1985-86. Langdon

**485 Opera Workshop** (I and II, 1) Performing techniques for the operatic singer. Coordination of music and drama with emphasis on body movement as it relates to historical periods and national characteristics. Development of professional standards and

attitudes. (Lec. 1, Lab. 2) May be repeated. Pre: 251A Voice or permission of department. In alternate years, next offered 1984-85. Langdon

**496 Jazz Workshop** (SS, 1) Intensive study of jazz theory and improvisation; rehearsal and performance of jazz literature. (Workshop 2) Pre: 111 or permission of instructor. Motycka

**499 Pedagogy of String Instruments and Performance of String Literature** (SS, 4) Exploration and implementation of successful methods of teaching orchestral string instruments combined with concentrated rehearsals and performance of classic and contemporary literature for strings. Pre: audition. Degree of achievement open, but some college-level experience in string performance expected. Staff

**512 Advanced Instrumental Conducting** (I, 2)

**537 Musical Thought and Expression** (I, 3)

**540 Advanced Principles of Music Education** (II, 3)

**545 Musical Aptitude and Achievement** (I, 3)

**548 Research in Music** (II, 3)

**551 Performance as Minor or Elective** (I and II, 2)

**555 Graduate Recital for Performance Minor** (I and II, 0)

**561 Performance Major** (I and II, 3, 4, or 6)

**565 Graduate Recital for Performance Major** (I and II, 0)

**570 Graduate Project** (I and II, 3)

**590 Piano Accompanying** (I and II, 1)

**591 University Symphony Orchestra** (I and II, 1 each)

**594 Symphonic Wind Ensemble** (II, 1)

**595 Concert Choir** (I and II, 1 each)

**596 Jazz and Studio Ensemble** (I and II, 1)

**598 Chamber Music Ensemble** (I and II, 1 each)

## Natural Resources Science (NRS)

Chairperson: Associate Professor Wright

**100 (RDV) Natural Resource Conservation** (I, 3) Introduction to man's use and management of his natural resources: land, food, forest, wildlife, water, minerals, and air, with a survey of contemporary resource-use problems in environmental pollution. (Lec. 3) Husband (S)

**212 (SLS) Introduction to Soil Science** (I and II, 3) Physical, biological, and chemical properties of soils and their practical application to plant science. Introduction to soil genesis, classification, and productivity. Soil-man interactions. (Lec. 3) Sheehan (N)

**213 (SLS) Introductory Soils Laboratory** (I and II, 1) Mechanical analysis, mineralogical identification, soil organic matter, bulk density, cation exchange, soil profile, soil water, weathering of minerals, soil acidity, and

lime requirements. Independent study. (Lab. 2) Pre: concurrent registration in 212 or permission of instructor. Sheehan

**301 (FOR) Introduction to Forest Science** (I, 3) Development and importance of forestry; forest regions; tree characteristics and identification with emphasis on north-eastern species; forest environment; tree growth and site productivity. (Lec. 2, Lab. 2) Pre: BOT 111. Brown and Gould

**302 (FOR) Fundamentals of Forest Management** (II, 3) Wood properties, timber harvesting, measurement and utilization of forest products; establishment, tending, and protection of forest stands; silvicultural systems; forest inventory procedures and management plans. (Lec. 2, Lab. 2) Pre: 301. Brown

**305 (FOR) Principles of Wildlife Management** (I, 3) Introduction to wildlife management. Typical forest and farm game species. Forest and farm habitats analyzed, management principles emphasized. (Lec. 2, Lab. 2) Pre: BOT 111, ZOO 111 and ZOO (BOT) 262. Gould

**306 (FOR) Wetland Wildlife Management** (II, 3) Continuation of 305 with introductory wetlands management. Typical furbearers, waterfowl, and fish. Emphasis on habitat management. (Lec. 2, Lab. 2) Pre: 305. Gould

**350 Soil Morphological Investigations** (II, 2) A detailed study of the morphological properties utilized in describing soil profiles. Interpretation of morphological characteristics pertaining to land use. (Lec. 2) Pre: prior or concurrent registration in 212 or permission of instructor. Staff

**351 Soil Morphology Practicum** (I, 1) Six weeks of practical experience in the description of soil profiles under field conditions. Field trips to observe, describe, and interpret morphological properties as utilized in soil judging. May be repeated with permission of department. (Lab. 5) Pre: 350 or permission of instructor. Staff

**375 (SLS) Fertilizers and Soil Productivity** (I, 3) Development, manufacture, and properties of fertilizer materials, lime, compost, sewage, sludge, animal manures, and industrial wastes. Soil fertility evaluation and fertilizer management systems. Economics of fertilizer, lime, and soil amendment use. (Lec. 3) Pre: 212. Sheehan

**380 (SLS) World Soils** (II, 3) A study of global soils in relation to their distribution, prior, present, and potential future use for agricultural production and development. U.S. and other taxonomic systems are compared. (Lec. 3) Pre: 212. Sheehan

**401 (FOR) Forest Influences** (I, 3) Effects of forest vegetation on local climate, the hydrologic cycle, soil, and man; relationships to water yield and runoff. Measurement of precipitation, runoff, and other variables. (Lec.

3) Pre: junior standing; EST 408 or 220; BOT 323 recommended. In alternate years, next offered 1985-86. Brown

**402 (FOR) Wildlife Populations** (II, 3) Ecological presentation of characteristics of exploitable animal populations and mechanisms that regulate their numbers through time. Methods used in wildlife population research. (Lec. 2, Lab. 3) Pre: ZOO 111 or BIO 102; ZOO 463 recommended. Husband

**411 (SLS) Soil Chemistry** (II, 3) Inorganic chemical reactions of soil systems in nature and of laboratory analysis of soils. (Lec. 2, Lab. 3) Pre: junior standing, 212, 213 or equivalent. Quantitative analysis advised. Felbeck

**412 (SLS) Soil Biochemistry** (II, 3) Origin, chemical and physical characteristics, and transformations of organic compounds and biological polymers in soils. Previous courses in organic chemistry and soils advised. (Lec. 1, Lab. 6) Pre: junior standing. In alternate years, next offered 1985-86. Felbeck

**423 (FOR) Wetland Ecology** (I, 4) Origin, development, and characteristics of inland and tidal wetlands. Topics include geology, hydrology, soils, plant ecology, succession. Wetlands of North America and the world, with emphasis on the glaciated Northeast. (Lec. 2, Lab. 4) Pre: BOT (ZOO) 262 and GEL 103 or 105 or permission of instructor. Golet

**424 (FOR) Wetlands and Land Use** (II, 3) In-depth study of land use involving wetlands, values of wetlands to society and mechanisms for wise management of wetlands. Wetland classification, inventory, evaluation, legislation. Field project on wetland evaluation. (Lec. 2, Lab. 3) Pre: 423. Golet

**450 (SLS) Soil Conservation and Land Use** (II, 3) Application of soil survey interpretation as a tool in soil and water conservation and land use planning. Implications of soil properties and problems for land use considered with emphasis on urbanizing situations. (Lec. 3) Pre: 212 or permission of instructor. Wright

**451 (SLS) Soil Conservation Technology**  
See Resource Mechanics 451.

**468 (SLS) Soil Genesis and Classification** (I, 4) Genesis, morphology, classification, and geographic distribution of soils. Broad principles governing soil formation. Laboratory includes field trips to observe different types of soils. (Lec. 3, Lab. 2) Pre: 212. In alternate years, next offered 1984-85. Wright

**475 Plant Nutrition and Soil Fertility**  
See Plant Science 475.

**491, 492 (FOR) Special Projects** (I and II, 1-3) Special work to meet the needs of individual students in natural resources. (Lec. and/or lab. according to nature of project) Pre: permission of department. Staff



**568 (SLS) Recent Advances in Soil Science** (I, 3)

**591, 592 Special Problems** (I and II, 1-3 each)

## New England Studies (NES)

Director: Associate Professor Arakelian

**200 New England** (I or II, 3) Introduction to the study and interpretation of New England culture through the social and natural sciences, humanities, and arts. Field work. Staff

**300 The New England Experience** (SS, 3) Life in New England, past and present, through varying disciplines focusing on a new topic each summer. May be repeated for credit when emphasis changes. (Lec. 3) Staff

**400, 401, 402, 403 Special Topics in New England Studies** (SS, 1-3 each) Specialized topics in the study of New England\*offered by specialists in the field. (Lec. 1) May be repeated with different topics. Staff

**500 Readings in the New England Experience** (SS, 4)

## Nuclear Engineering (NUE)

Chairperson: Professor Estrin

**581 (or CHE 581) Introduction to Nuclear Engineering** (I and II, 3)

**582 (or CHE 582) Radiological Health Physics** (I, 3)

**585 (or CHE 585) Measurements in Nuclear Engineering** (I, 3)

**586 (or CHE 586) Nuclear Reactor Laboratory** (II, 3)

## Nursing (NUR)

Acting Dean: Professor H.S. Kim

**101 Basic Concepts for Helping Professionals** (I and II, 2) Introduction to concepts of adaptation, communication, and dynamics of helping. Emphasis on self-development through individual and group processes by exploring ways to meet common needs. (Rec. 2) Staff

**150 Human Sexuality** (I and II, 3) Interdisciplinary approach to the study of individual and societal determinants in the development, integration, and expression of human sexuality and a code of sexual behavior. Hirsch and Staff (S)

**211 Nursing in Contemporary Society** (I and II, 3) Trends and issues in professional nursing and nursing education. Adaptation-level theory and related concepts with emphasis on utilization of nursing process. (Lec. 3) Pre: registered nurse standing or permission of instructor. Staff

**220 Basic Concepts of Professional Nursing Practice** (I and II, 4) Basic course utilizing beginning concepts of nursing with clients who have simple health problems requiring application of the nursing process; includes learning experiences in manual and psychosocial skills. (Lec. 2, Lab. 8) Pre: 101 and foundation courses in physical and social sciences listed in curriculum. Evans and Staff

**225 Research in Nursing** (I and II, 3) Introduction to research process. Opportunity for analyzing and evaluating research findings. Emphasizes the importance of research in professional nursing with the focus on the nurse as a consumer rather than a researcher. (Lecture/Discussion) Pre: 220 or 211, sophomore standing, concurrent enrollment in 220. Staff

**231 Care of the Adult I** (I and II, 6) Emphasis on analysis of adult nursing problems through application of scientific principles and concepts in biomedical as well as psychosocial sciences within the conceptual framework of adaptation-level theory. (Lec. 6) Pre: foundation courses in physical and social sciences listed in curriculum, 220 or R.N. status. Joseph and Staff

**232 Care of the Adult Practicum I** (I and II, 6) Emphasizes skills and knowledge in individualized nursing process applying the adaptation-level theory for critical assessment of nursing action. Must be taken concurrently with 231. Joseph and Staff

**260 Human Sexuality Perspectives** (I and II, 3) An interdisciplinary approach to the study of human sexuality for the purpose of developing peer counseling skills. Laboratory experience required at Speak-Easy (Health Education Center). (Lec. 2, Lab. 3) Pre: sophomore standing and permission of instructor. Temple

**301 Parent and Child Health Nursing** (I and II, 7) Concepts and theories related to maintenance of and interference in health during phases of child bearing and child rearing. Emphasizes the role of nurses in promoting high-level adaptation. Pre: HCF 200 or PSY 232; PCL 226 and NUR 231, 232. Must be taken concurrently with 302. Hames and Staff

**302 Parent and Child Health Nursing Practicum** (I and II, 4) Application of nursing process to the health needs and problems of parents and children in selected clinical situations. Use of automobile or funds to meet cost of public transportation preferable. Must be taken concurrently with 301. Hames and Staff

**311 Mental Health and Psychiatric Nursing** (I and II, 3) Development of the basic knowledge and understanding necessary to the use of self as a therapeutic agent as related to mental health and illness. Application to all areas of nursing. (Lec. 3) Pre: 231, 232. Must

be taken concurrently with 312. Garner and Staff

**312 Mental Health—Psychiatric Nursing Practice** (I and II, 3) Clinical experience in developing the ability to use oneself therapeutically in the care of individuals, groups, and families in a variety of mental health-psychiatric settings. (Lab. 9) Use of automobile or funds to meet costs of public transportation required. Pre: 231, 232; students who have taken 301, 302 preferred. Must be taken concurrently with 311. Garner and Staff

**321 Community Health Nursing** (I and II, 3) Introduction to basic principles of public health and community health nursing. Emphasis on family/group centered approach to health care. (Lec. 3) Pre: 301, 302. Schwartz-Barcott and Staff

**322 Community Health Nursing Practicum** (I and II, 4) Clinical nursing practice experience in a variety of community-based settings. Emphasis on family. Experience in Community Health Program development. Use of automobile or funds to meet cost of public transportation required. (Lab. 12) Must be taken concurrently with 321. Staff

**333 Complex Clinical Nursing** (I and II, 5) Application of adaptation-level theory to systematic study of nursing problems related to complex and comprehensive patient care in various health-care phases and settings. (Lec. 5) Pre: 301, 302 and 311, 312; senior standing. Must be taken concurrently with 334. Waldman and Staff

**334 Complex Clinical Nursing Practicum** (I and II, 5) Application of nursing process based on adaptation-level theory to patients' complex nursing problems. Emphasis on continuity of nursing through crisis and health maintenance. (Lab. 15) Pre: 301, 302, and 311, 312; senior standing. Must be taken concurrently with 333. Waldman and Staff

**335 Organization and Leadership in Nursing** (I and II, 2) Seminar in systematized examination and study of theories and concepts of leadership, group process, and organizational behaviors in nursing. Emphasis on study of complexities of nursing within situational and organizational framework. Pre: 301, 302 and 311, 312; senior standing. Last taught fall 1984. Manfredi and Staff

**340 Theoretical Perspectives of Professionalism in Nursing** (I and II, 3) Examination of theories, issues, and concepts related to professionalism. Emphasis is on ethical, moral, and legal conduct, with responsibilities to self, peers, and the profession with implications for society. (Lecture/Discussion) Pre: 311, 312. Staff

**350 Conference on Professional Nursing** (I and II, 2) Major nursing and health issues.

Emphasis on the professional nurse's responsibility to the profession and to the community in which she or he lives. (Lec. 2) Pre: senior standing. Last taught fall 1984. Feather

**360 Impact of Death on Behavior (II, 3)** Seminar to explore the human experience of dying and the issue of quality of life. Group discussion focuses on the effect that individual and social values and medical and social structures have on one's grief response and bereavement process. (Lec. 3) Staff (L)

**390 Directed Study (I and II, 3)** Honors thesis or equivalent independent project relating to the nursing major. Faculty guidance in problem delineation, development, and drafting of a study plan in the area of a student's special interest. Project need not be completed in one semester, but no more than three credits allowed. S/U credit. Pre: admission to College of Nursing. Staff

**495 Expanded Nursing Assessment Skills (I, 3)** Expansion of nursing assessment skills including health history taking and physical, psychological, and social assessment skills. Specific physical assessment skills included are inspection, auscultation, percussion, and palpation. (Lec. 2, Lab. 3) Not acceptable for graduate program credit in nursing. Pre: permission of instructor. Castro, Phillips and Powell

- 501 Theoretical Study of Phenomena in Nursing (I, 3)**
- 502 Practicum in the Study of Phenomena in Nursing (I, 3)**
- 505 Nursing Research (I or II, 3)**
- 506 Independent Study in Nursing (I and II, 2-6)**
- 510 Advanced Leadership and Nursing Role Development (II, 3)**
- 511 Advanced Mental Health Nursing I (I or II, 3)**
- 512 Practicum in Advanced Mental Health Nursing I (I or II, 3)**
- 513 Advanced Mental Health Nursing II (I or II, 2)**
- 514 Practicum in Advanced Mental Health Nursing II (I or II, 4)**
- 521 Theoretical Study of Major Problems in Nursing Practice (II, 3)**
- 522 Practicum in the Study of Major Problems in Nursing Practice (II, 3)**
- 531 Primary Health Care Nursing (II, 3)**
- 532 Practicum in Primary Health Care Nursing I (II, 3)**
- 533 Primary Health Care Nursing II (I, 3)**
- 534 Practicum in Primary Health Care Nursing II (I, 6)**
- 541 Theoretical Study of Nursing Education (I or II, 3)**
- 542 Practicum in Nursing Education (I or II, 3)**
- 551 Theoretical Study of Nursing Administration (I or II, 3)**
- 552 Practicum in Nursing Administration (I or II, 3)**

- 560 Ethical Theories, Nursing Practice and Health Care (II, 3)**
- 561 Theories of Practice for Clinical Nursing (I or II, 3)**
- 562 Advanced Clinical Study of Nursing Practice in Critical Care (I or II, 3)**
- 563 Advanced Clinical Study of Nursing Practice in Gerontology (I or II, 3)**
- 564 Advanced Clinical Study of Nursing Practice in Parent-Child Health (I or II, 3)**

## Ocean Engineering (OCE)

Chairperson: Professor Silva

- ✓ **346 (or PED 346) Skin and Scuba Diving, Beginners (I, 2)** Emphasis on basic physical principles, hazards, selection of equipment, and techniques. (Lec. 1, Lab. 2) Pre: permission of instructor. McAniff
- ✓ **347 (or PED 347) Skin and Scuba Diving, Advanced (II, 2)** Emphasis on the skill needed for advanced scuba activities as related to deep dives, salvage. (Lec. 1, Lab. 2) Pre: 346. McAniff
- ✓ **351, 352 Plant Design and Economics** See Chemical Engineering 351, 352.
- ✓ **401, 402 Introduction to Ocean Engineering Systems I and II** See Mechanical Engineering 401, 402.
- ✓ **403, 404 Introduction to Ocean Engineering Processes I and II** See Chemical Engineering 403, 404.
- ✓ **406 Introduction to Coastal and Ocean Engineering** See Civil and Environmental Engineering 406.
- ✓ **407 Project in Ocean Engineering** See Civil and Environmental Engineering 407.
- ✓ **410 Basic Ocean Measurements** See Mechanical Engineering 410.
- ✓ **411 Basic Coastal Measurements** See Civil and Environmental Engineering 411.
- 500 Basic Ocean Engineering (II, 3)**
- 510 (610) Engineering Ocean Mechanics (II, 3)**
- 512, 513 Hydrodynamics of Floating and Submerged Bodies I and II (I and II, 3)**
- 521 Materials Technology in Ocean Engineering (I, 3)**
- 522 Dynamics of Waves and Structures (I, 3)**
- 523 (or CVE 523) Coastal Structures (II, 3)**
- 534 (or CHE 534) Corrosion and Corrosion Control (II, 3)**
- 535 (or CHE 535) Advanced Course in Corrosion (II, 3)**
- 540 (or MCE 540) Environmental Control in Ocean Engineering (II, 3)**

- 555, 556 Ocean Engineering Systems I and II (I and II, 3 each)**
- 560' Introduction to Data Collection Systems (I, 3)**
- 561 Introduction to the Analysis of Oceanographic Data (I, 3)**
- 565 Ocean Laboratory I (I or II, 3)**
- 566 Ocean Laboratory II (I or II, 3)**
- 571 (or ELE 571) Underwater Acoustics I (I, 3)**
- 587 Submarine Soil Mechanics (I, 3)**
- 591, 592 Special Problems (I and II, 1-6 each)**

## Oceanography (OCG)

Dean: Professor Knauss

- 401 General Oceanography (I and II, 3)** General survey in the major disciplines including geological, physical, chemical, and biological aspects integrated into a conceptual approach to the ocean sciences. (Lec. 3) Pre: at least one laboratory course in a physical or biological science and junior standing or above. Staff (N)
- 491 Ocean Studies (I and II, 15)** Full-time intensive work experience with Graduate School of Oceanography research staff at Narragansett Bay Campus. Student expected to participate in research program, seminars, and other activities of Bay Campus. Pre: junior year standing in natural sciences, natural resources, or engineering, plus permission of staff. Not for graduate credit. S/U only. Jeffries and Staff
- 493, 494 Special Problems and Independent Study in Oceanography (I and II, 1-6)** Research in oceanography conducted as supervised individual study. (Lab. 2-12) Pre: junior or senior standing in natural science, natural resources, or engineering plus permission of staff. S/U only. Staff
- 501 Physical Oceanography (I, 3)**
- 510 Descriptive Physical Oceanography (II, 3)**
- 521 Chemical Oceanography (II, 3)**
- 524 Chemistry of the Marine Atmosphere (II, 3)**
- 540 Geological Oceanography (II, 3)**
- 544 Seminar in Petrogenesis (I, 3)**
- 545 Geomagnetism and Paleomagnetism (I, 3)**
- 561 Biological Oceanography (I, 3)**
- 571 Benthic Environment (I, 3)**
- 574 Biology of Marine Mammals (II, 3)**
- 576 (or MIC 576) Marine Microbiology (I, 4)**

## Pharmaceutics (PHC)

Chairperson: Professor Rhodes

✓ **225 (or PCL 225) Pharmaceutical Calculations and Introduction to Pharmacology** (I, 2) Introduction to drugs, mechanisms of action, and mathematical concepts of dosage and strength. (Lec. 2) For students in the College of Nursing. Paruta and DeFeo

**327 Biopharmaceutics** (I, 2) Physico-chemical properties of dosage forms as they control drug release; dissolution kinetics. (Lec. 2) Pre: third-year standing. Rhodes

**328 Pharmacokinetics** (II, 3) Application of pharmacokinetic principles to the disposition of drugs in the body. Development of drug dosage regimen in disease states. (Lec. 2, Lab. 2) Pre: 327 or equivalent. Birmingham

**330 General Pharmaceutical Technology** (I and II, 5) Introduction to mathematical concepts, application of physical-chemical principles and processes to pharmaceutical systems, formulations of clinical dose forms. (Lec. 5) Pre: third-year standing. Birmingham and Osborne

**331 General Pharmaceutical Technology Laboratory** (I and II, 2) Formulation and preparation of clinical dose forms including dispensing and other information relevant to professional practice. (Lab. 8) Pre: concurrent registration in 330. Osborne

**351 Personal Cosmetics** (II, 3) Formulation and manufacture of various types of personal cosmetics and toilet preparations. Examples of types studied are prepared in laboratory. (Lec. 2, Lab. 3) Pre: 344. Osborne and Lausier

**425 History of Pharmacy** (II, 3) Historical development of pharmacy in this country and abroad emphasizing the background of recent developments in the profession and related health sciences. (Lec. 3) Pre: fourth- or fifth-year standing. Osborne

✓ **460 (or PHP 460) Non-Prescription Drugs and Medical Devices** (I and II, 4) Study and evaluation of non-prescription drugs, health aids, and medical devices. (Lec. 4) Not for graduate credit. Pre: PHC 330, 331; 4th year standing and permission of department. Lausier

**497, 498 Special Problems** (I and II, 1-3 each) Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. 3-10) Pre: permission of department. Staff

**521, 522 Seminar** (I and II, 1 each)

**535 Pharmacokinetics** (II, 3)

## Pharmacognosy (PCG)

Chairperson: Professor Worthen  
(Pharmacognosy and Environmental Health)

**445, 446 General Pharmacognosy** (II and I, 3) Natural products of biological origin as important pharmaceuticals. Sources, process of isolation and general fundamental properties. (Lec. 3) Pre: CHM 228, BIO 101, 102, PHC 333, or permission of department. Worthen, Lasswell, and Shimizu

**447 General Pharmacognosy Laboratory** (I and II, 1) Introduction to and application of laboratory methods utilized in the preparation, identification, isolation, and purification of pharmaceuticals from natural sources. (Lab. 3) Pre: CHM 226, BIO 101, 102 or equivalent. Lasswell

**459 Public Health** (I, 3) Principles of prevention and control of disease and application of this information to current health problems. (Lec. 3) Pre: MIC 201, PCG 446, or permission of instructor. Worthen

**497, 498 Special Problems** (I and II, 1-3 each) Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing acceptable report. (Lab. TBA) Pre: permission of department for undergraduate students only. Staff

**521, 522 Seminar** (I and II, 1 each)

**532 (or PHP 532) Pharmaceutical Sterile Products** (I, 3)

**533 Medicinal Plants** (I and II, 2)

**536 Antibiotics** (II, 3)

**548 Physical Methods of Identification** (II, 3)

**551, 552 Chemistry of Natural Products** (I and II, 3 each)

**597, 598 Special Problems** (I and II, 1-3 each)

## Pharmacology and Toxicology (PCL)

Chairperson: Professor DeFeo

**221 Dental Therapeutics** (I, 2) Medicinal agents, their actions and therapeutic uses with special emphasis on substances employed in dental practice. (Lec. 2) For students in dental hygiene. Rodgers

✓ **225 Pharmaceutical Calculations and Introduction to Pharmacology**  
See Pharmacy 225.

**226 Pharmacology and Therapeutics** (II, 3) Continuation of 225 with special emphasis on properties, actions, uses, dosage, and toxicology of drugs used in the treatment of disease. (Lec. 3) Pre: 225. For students in the College of Nursing. Swonger

✓ **344 Principles of Medicinal Chemistry and Pharmacology**  
See Medicinal Chemistry 344.

✓ **436 (or PSY 436) Psychotropic Drugs and Therapy** (II, 3) Interaction of drug and non-drug therapy and of physiological and psychological origins of psychopathology. Intended for advanced undergraduate and graduate students interested in clinical psychology. (Lec. 3) Pre: any one of the following: BIO 102, ZOO 111, 121, PSY 381 or permission of instructor. Swonger

**441, 442 General and Clinical Pharmacology** (I and II, 4 each) Action of drugs on physiological function with reference to responses by tissue systems. Toxic effects, mechanism of action, dosage, and pertinent clinical aspects. (Lec. 4) Pre: third-year standing. DeFanti and Staff

**443 General Pharmacology Laboratory** (I and II, 1) Effects of drugs on physiological function with reference to responses by tissue systems. Toxic effects, mechanism of action, and dosage. (Lab. 3) Pre: fourth-year standing or permission of department. Chichester, Rodgers

**497, 498 Special Problems** (I and II, 1-3 each) Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. TBA) Pre: permission of department. Staff

**521, 522 Seminar** (I and II, 1 each)

**542 Evaluation of Drug Effects** (II, 5)

**544 Forensic Toxicology** (II, 3)

**546 Advanced Toxicology** (II, 3)

**550 Operant Analysis of Behavior** (I, 3)

**562 Psychopharmacology** (II, 3)

**564 Psychopharmacology Laboratory** (II, 1-3)

**572 Neural Bases of Drug Action** (I, 3)

**580 (or ELE 580) Experimental Animal Techniques** (II, 3)

## Pharmacy Practice (PHP)

Chairperson: Associate Professor Taubman

**203 (PAD) Social and Professional Orientation to Pharmacy** (I and II, 2) Introduction to social and professional consideration facing the practicing pharmacist, including matters directly related to patient care and interaction with allied health professions. (Lec. 2) Pre: first and second year standing only. Staff

**349 (PAD) Pharmacy Administration Principles** (I, 3) Practical solutions to problems encountered in selection, location, and management of pharmacies, their personnel, stock, and equipment. (Lec. 3) Taubman